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The New England
Journal of Medicine

VOLUME 203 OCTOBER 2, 1930 NUMBER 14

# HOW CANCER STARTS IN THE CERVIX UTERI*

BY WILLIAM P. GRAVES, M.D.†

THERE is a prevalent belief among the laity and among many of the profession that science is no nearer a solution of the cancer problem than it was twenty-five years ago. Although scientific studies have not yet resulted in solving the whole problem, they have at least enormously increased our knowledge of the disease and supplied us with many means of combating it in both a curative and prophylactic way.

From a purely practical standpoint it is unprofitable to regard cancer as a constitutional affection that strikes haphazard and one that may be prevented by general systemic means such as diet or specific drugs, desirable as such a possibility might be. It is safer, at present, to look upon cancer as a collection of individual organ-diseases which, though they share in common the attribute of inevitable growth and destruction of the host, nevertheless differ from each other in such attributes as specific etiology, time development, clinical course, tendency to metastasis, histological type and so on. Not only does each organ of the body have its individual cancers with their varying characteristics, but each cancer of the same histogenetic class exhibits variations in its cell type, its degree of malignancy and its susceptibility to certain forms of treatment. The subject is, therefore, too complex for any one individual completely to master.

But there are a few cancers about which the general practitioner should know all there is to know, cancers of the favorable type that are capable of early diagnosis and amenable to curative and prophylactic treatment. Preëminent among these is squamous cancer of the uterine cervix. This locus has proved to be the most fertile field in the entire body for the study of cancer. Its close relationship to child-bed injury and chronic inflammation was the chief stimulus that led to the experimental proof of irritation as the immediate cause of cancer. The curative agency of radium was first demonstrated in the treatment of cervical cancer. And finally, the reaction of epithelial cells to irritation and their development, step by step, into a malignant growth has been more clearly followed in histological studies of the diseased cervix than in any other organ of the body.

*Lecture given at the Free Hospital for Women for the Graduate Course in Cancer of the Massachusetts Department of Public Health.

†Graves—Baker Professor of Gynecology, Harvard Medical School. For record and address of author see "This Week's Issue", page 697.

I have chosen this last as the subject of my lecture.

The epithelium of the uterus, which in the embryo is a segment of the Müllerian tract, becomes differentiated during foetal life into three highly important structures, called, from their location, the endometrium, the endocervix and the vaginal portion of the cervix (portio vaginalis, or most commonly, portio for short). These three epithelial membranes, notwithstanding their common origin, exhibit in the adult remarkable differences in histological type, function, and reaction to inflammation and malignant growth. Since an intimate knowledge of the three uterine epithelia is essential to an understanding of each uterine cancer, I shall pause briefly to describe them.

*Endometrium.*—The mucous membrane lining the body of the uterus is made up of simple tubular glands imbedded in a cellular stroma (Fig. I). During active sexual life this membrane, under the influence of the ovarian hormones, is in a constant state of change, the glands, in the absence of pregnancy, passing through a monthly cycle of growth, secretion, desquamation, hemorrhage and regeneration. The endometrium, after destruction by menstruation or curettement, restores itself *in toto* with extraordinary rapidity and precision. This property makes it a self-cleansing organ, so that during menstrual life it is comparatively immune to superficial infections and malignant changes. After the menopause the endometrium

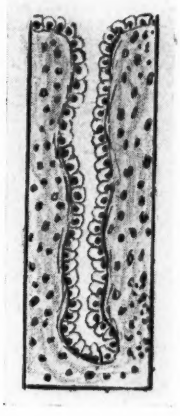


FIG. I. Simple tubular gland of the endometrium in the rest stage of the menstrual cycle.

remains, under normal conditions, in the simple rest stage and is inert, but during this period it is peculiarly susceptible to local irritation and cancerous growth. The wide difference between cancer of the body and cancer of the cervix must always be borne in mind.

*Endocervix.*—The mucous membrane lining the cervical canal is also a glandular structure, but the glands (unlike those of the endometrium) are of a complicated racemose type. The cells that clothe the surface and the glandular crypts are high and columnar and constantly manufacture a true mucous secretion, thus simulating, both in appearance and function, the mucous cells of the intestinal tract (Fig. II). The epithelium of the endocervix

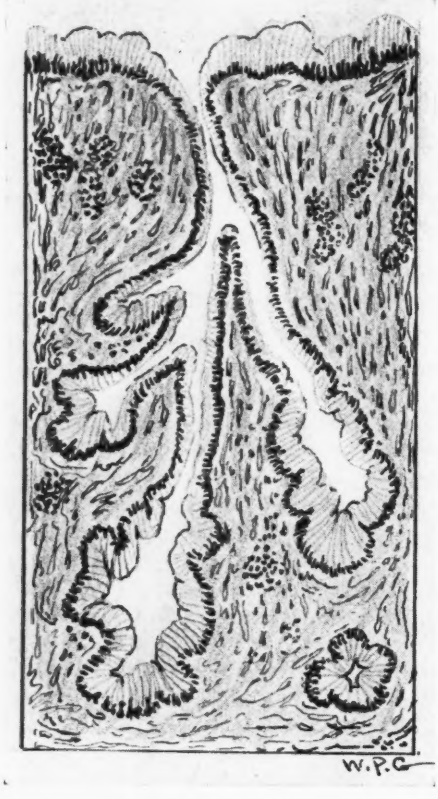



FIG. II. Racemose gland of the endocervix. Note the high columnar epithelium and the narrow duct that opens on the surface of the mucous membrane.

is much more stable than that of the endometrium or the portio; it undergoes no obvious changes during the menstrual cycle and on account of its higher differentiation is considerably less liable to malignant growth than the other two membranes. It has definite powers of regenerative repair when injured and in restoring itself always repeats its whole glandular structure instead of growing by simple cell-proliferation, as does the epithelium of the portio.

The endocervix is extremely susceptible to infection and the voluminous glandular crypts with their narrow ducts create an organ only too well adapted to the harboring and nourishing of inflammatory products for long periods of time. As we shall see, this unfortunate

FIG. III. The muco-cutaneous border just inside the external os of the cervix. Note the abrupt change from the columnar epithelium of the endocervix to the squamous epithelium of the portio. It is at this junction of the two epithelia that squamous cancer of the cervix most commonly starts.

mechanism has an important bearing in maintaining the constant irritation that finally pro-

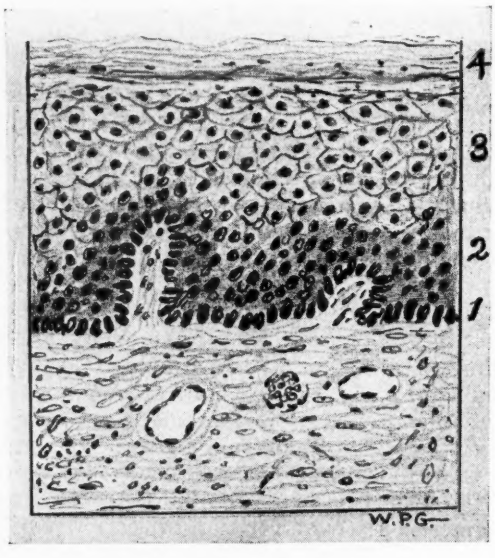



FIG. IV. Epidermis (squamous epithelium) of the portio vaginalis.

1. The basal layer from which the overlying cells are derived. It consists of a single row of deeply-staining, low, columnar epithelium.

2 and 3. The intermediate layer.

(2) represents the more recent cells derived from the basal layer. Being young and undifferentiated, they are unstable and readily reproduce themselves when irritated. It is from this layer that cancer usually develops. (3) represents the older, more differentiated and more stable cells of the intermediate layer. They are comparatively resistant to irritation and reproduction.

4. The superficial layer. This is the last stage of the epidermal cells that have their origin from the basal layer and gradually rise to the surface as new cells are formed beneath them. The cells of the superficial layer are flat and scale-like and make a thin, horny protective covering for the underlying cells.

vokes the neighboring epithelium of the portio to malignant proliferation.

*The Portio.*—Just inside the external os the endocervical mucous membrane changes abruptly to a typical squamous or epidermal epithelium, the line of demarcation being called the muco-cutaneous border (Fig. III). If the os is sufficiently patent this border is easily seen and felt, for the mucous membrane is red and velvety, whereas the squamous epithelium of the portio is smooth, glossy and of a bluish-pink color. The location of the muco-cutaneous border varies greatly with the condition of the cervix. Normally it is well "tucked in" out of sight and harm's way, a point to remember in repairing cervical lacerations. If the cervix is relaxed or lacerated or inflamed the border everts, exposing the mucous membrane to trauma and infection. In virgins with undeveloped uteri the border is often situated well out on the cervical lips, so that the mucous membrane pouts outward, giving the appearance of a raw surface, and hence called pseudo-erosion. In this position it is susceptible to infections even if the hymen is intact. Cancer of the cervix, as will be seen, usually starts at the muco-cutaneous border.

A knowledge of the cell-structure and behavior of the epithelial covering of the portio is essential for an understanding of squamous cancer of the cervix. The function of this epithelium is purely one of *protection,* and it is in the long-continued, thwarted attempts to fulfill this function that the cell elements finally become exhausted, run wild and produce a cancer.

The epithelium of the portio essentially resembles the epidermis of the skin, excepting that it is devoid of hair follicles, sebaceous and sweat glands. In the normal cervix the line between the basal layer of the epidermis and corium is straight or wavy instead of papilliform, as in the epidermis of the skin. When chronically irritated, however, the outline becomes papilliform or bulbous and is a significant point in diagnosis.

The cell layers of the epidermis correspond in general to those of the skin, and should be carefully studied (Fig. IV). Beginning at the deepest part, one sees first a single row of small, deeply-staining cells of a somewhat cylindrical shape, the so-called basal layer. This basal layer is all-important, for it is the source, the matrix, from which all the overlying protecting cells of the epidermis are generated. The function, then, of the basal layer is one of reproduction, that of its progeny, the overlying cells, one of protection. When, as a result of some destructive injury, the basal layer is called upon to perform its regenerating function, it responds with amazing activity and profusion.

The progeny cells of the basal layer are heaped above it in distinctive strata. Immediately above it is a layer several cells deep, consisting of rather large, well stained cells of an irregular shape. They are, naturally, the youngest of the protecting cells. As new cells are formed below them from the basal layer, they are pushed upward and assume new characteristics due to their age. They become faded in their staining properties, their cell walls are thicker and tougher, and contain small, spine-like projections. They now assume a polyhedral, mosaic-like form well adapted to their passive function of protection. Finally, as the process goes on, these polyhedral cells flatten out and perform their last protective duty as flat, horny scales constituting the superficial layer.*

### REACTION OF THE CERVICAL EPITHELIUM TO INFLAMMATION

At the present day, irritation in some form is generally regarded as the immediate instigator of all cancers, even though it cannot always be clearly demonstrated. But the word "irritation" is somewhat vague. One speaks of traumatic, inflammatory and chemical irritants, without giving much thought as to how they act. Trauma does not, of itself, produce cancer unless it first creates some chronic lesion that stimulates cell proliferation. Inflammation does not cause cancer unless it is continually repeated over so long a period that it finally overtaxes the reparative processes of the injured tissues, the irritant being more commonly chemical than bacterial. Physiological secretions of the body do not cause cancer unless by improper drainage, or otherwise, they become chemically changed and thus abnormally irritating.

The irritation theory is especially well exemplified in squamous cancer of the uterine cervix. In over 90 per cent. of all cervical cancers the cervix has been lacerated by childbirth or instrumental abortion. But since the cervix is practically always injured by childbirth, simple trauma cannot be regarded as a competent cause of cancer. In order to produce a cancer the trauma must have resulted in inflammation of a certain degree of virulence and chronicity.

Many nulliparous and even virgin women develop cancer of the cervix—much more frequently, in fact, as is shown by our own statistics, than is generally supposed. In these cases the conclusion is almost inevitable that the cancer must have been preceded by a chronic non-traumatic cervicitis of a type favorable to cancer production.

It has been shown, also, that acute injuries or inflammations of the cervix, no matter of how great severity, do not lead to cancer if they

*In a stable epidermis the various layers of cells are well-defined and have such distinct characteristics that five strata are usually described. Each one of these strata is endowed with several names, so that when these names are used indiscriminately and interchangeably, as they usually are, the average reader becomes much confused.

In the embryo the epidermis has only three simple layers, namely, the basal (germinative), the intermediate and the superficial (epitrichium). Since we are here dealing with the proliferative processes of the epidermis, which after all simulate those of embryonic development, it is sufficient to think only of the three embryonic layers, basal, intermediate and superficial. It is however, important to remember that the younger, deeper cells of the intermediate layer are more unstable (i.e., have a tendency to proliferate under irritation) than are the older cells near the surface, which are comparatively inert.

heal rapidly. Even prolonged inflammations are not dangerous if they are so destructive as completely to paralyze the reparative efforts of the cervical epithelium (Bailey). It is rather the mild, recurring, invasive infections which, by continually tantalizing and thwarting the regenerating cells, lead eventually to neoplastic growth.

The first effect of an acute inflammation at the dangerous muco-cutaneous border is to cause a superficial destruction of the epithelium in the form of a true erosion (Fig. V). When the

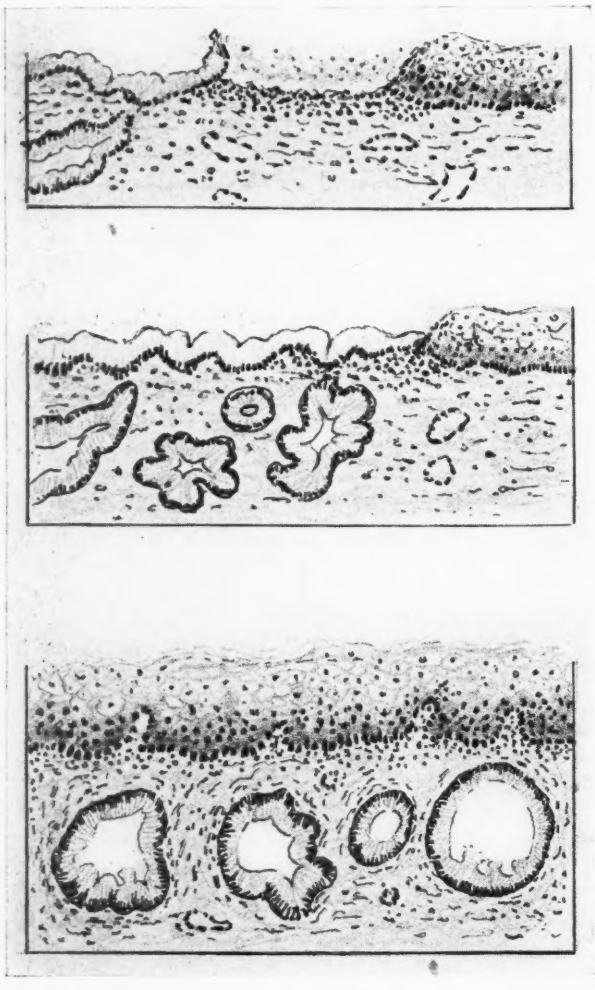


FIG. V. Normal repair of a cervical erosion.

A. Simple erosion at the muco-cutaneous junction. The surface epithelium has been destroyed by a superficial infection. The exudate is seen overlying the denuded area and slightly invading the stroma.

B. First stage of repair. The columnar epithelium of the endocervix grows in (from the left) and covers the eroded surface. Note that as it grows *new glands* are formed in the stroma.

C. Second stage of repair (epithelialization). The squamous epithelium grows in (from the right) and replaces the new surface columnar epithelium. The underlying glands remain, but since the new squamous epithelium has grown over the openings of their ducts, they become choked and dilated by the retained mucous secretion. In this manner they become the familiar Nabothian cysts.

virulence of the infection subsides, the epithelium repairs the breach in a characteristic way. The first step in the operation is a downward growth of the columnar endocervical epithelium over the denuded area (Fig. V-A). As has been noted above, this epithelium, when it regenerates, reproduces its glandular structure so that there will also be found beneath the new columnar surface-epithelium new racemose glands (Fig. V-B).

The second step in the repair is an *upward* growth of the squamous epithelium of the portio, which burrows under (or sometimes spreads over) the new columnar epithelium and completely replaces it. The new glands, however, remain *in situ*, but now with their ducts sealed by the new squamous epithelium that covers their openings. The new glands retain their power of secretion and, having now no exit, become cystic (Fig. V-C). In this manner the familiar Nabothian cysts are formed. This explains also why these cysts are so often encountered in an area well below the border of the cervical mucous membrane. The ectopic position of Nabothian cysts is of itself an indication that normal healing, or epithelialization of a cervical lesion, has taken place. Long before the histological processes of cervical repair were as well known as they are now, Nabothian cysts were regarded as a favorable sign of the absence of cancer. Even extensive lacerations with wide inflammatory lesions may sometimes be promptly healed and epithelialized, leaving the cervix in little danger of a future cancer. The new squamous epithelium may extend well up the cervical canal, so that the muco-cutaneous border recedes to a safe level, sometimes almost at the internal os. Here, even after deep lacerations, there may be no inflammation, no leucorrhea, no exposure of the cervical membrane, and no special need of further artificial repair.

But in many cases complete spontaneous repair does not take place and the situation becomes more serious. The continuance of a local cervical erosion that may lead to cancer is the result, usually, of a chronic inflammation of the cervical mucous membrane which, as we have pointed out above, is peculiarly suited to fostering bacteria, retaining their exudates, and then discharging them over the cervical lesion. The virulence of the infection is sufficiently mild to allow regenerative activity on the part of the cervical epithelium, but the infection, by constantly repeating itself, finally invades the cervical stroma. Having reached this location, the inflammatory exudate is now in a position to irritate the *under surface* of the squamous epithelium of the portio (Fig. VI). When the inflammation goes deep, the invaded portion of the cervical body becomes hard and hypertrophied, the surface bleeds easily to the touch, and there is always a leucorrheal discharge. This is the type of superficial and deep cervicitis which, if neglected, presages a cancer, and which every practitioner should be able to recognize. It is well to remember that this dangerous condition of the cervix can more easily be detected by the

sense of touch than by inspection through a speculum.

The general manner in which the inflammatory exudate provokes the squamous epithelium to malignant proliferation can be told in a few words. In order to be effective the hostile products of inflammation (bacterial or chemical, or both) must penetrate to the subepithelial tissue of the cervix, where by a rear attack they can make contact with the unprotected side of the basal layer of squamous epithelium. The basal layer responds to this attack by rapid generation of new cells in its usual manner and for a certain period is able to protect its progeny cells from contact with the invading exudate. But there comes a time when the resistance of the basal layer becomes exhausted; the cells at the point of attack die, and a breach is made through which the inflammatory exudate reaches the youngest cells of the intermediate layer (Fig. VII).

In a newly-made squamous epithelium these young cells are exceedingly unstable and, like the basal matrix, respond to irritation by rapid proliferation. It is at this stage that the intermediate cells, if the stimulus is maintained, lose their control and pass the mysterious border-line of malignancy beyond which there is no recall.

The accompanying photomicrographs show remarkably well the transition of the epithelium from the normal to malignancy under the influence of irritation. These unusual photographs are borrowed from an article by Dr. F. A. Pemberton and Dr. George van S. Smith, entitled, "The Early Diagnosis and Prevention of Carcinoma of the Cervix," published in the *American Journal of Obstetrics and Gynecology*, in the February number of 1929. The student is urged to study them with close attention.

The warfare that goes on in the microscopic arena between the destructive and defensive forces of nature is one of absorbing interest. By

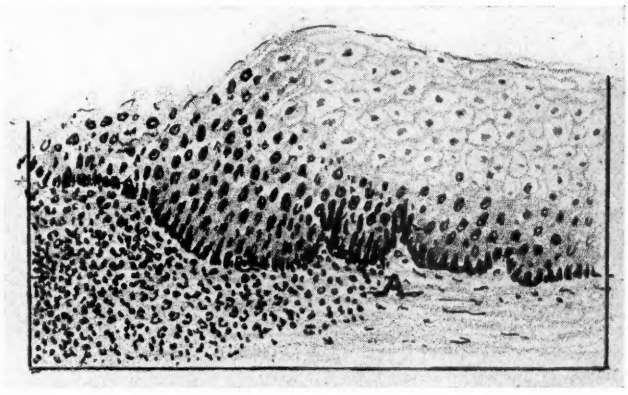



FIG. VI. Reaction of squamous epithelium to deep chronic inflammation. As a result of repeated infection the erosion has not healed. The inflammatory exudate has penetrated the stroma of the cervix and now lies beneath the basal layer, where it constantly irritates the basal cells to reproductive activity. The basal layer attempts to grow outward over the erosion in order to make a new epithelial covering, but is repeatedly thwarted. The basal layer responds by producing many young cells. These are produced so rapidly that they do not have time to become differentiated in the manner seen in the neighboring cells covering a non-irritated area. The line of demonstration between the two types of intermediate cells is seen at *A*, where the invading exudate ceases.

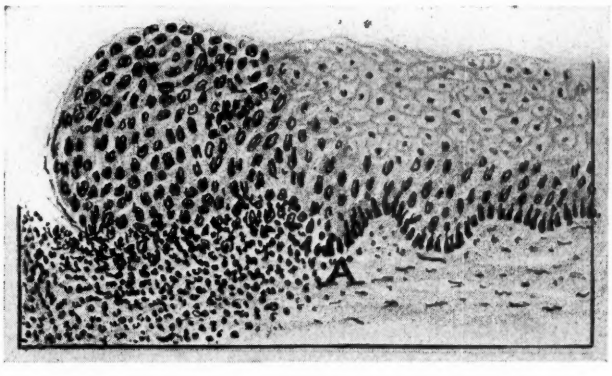



FIG. VII. The change to cancer. The invading exudate has at last broken through the basal layer and is now in contact with the sensitive young cells of the intermediate layer. On account of their instability these young cells are readily stimulated to pass to the stage of malignant reproduction from which there is no recall. It is important that the cervical lesion should be repaired before this stage is reached.

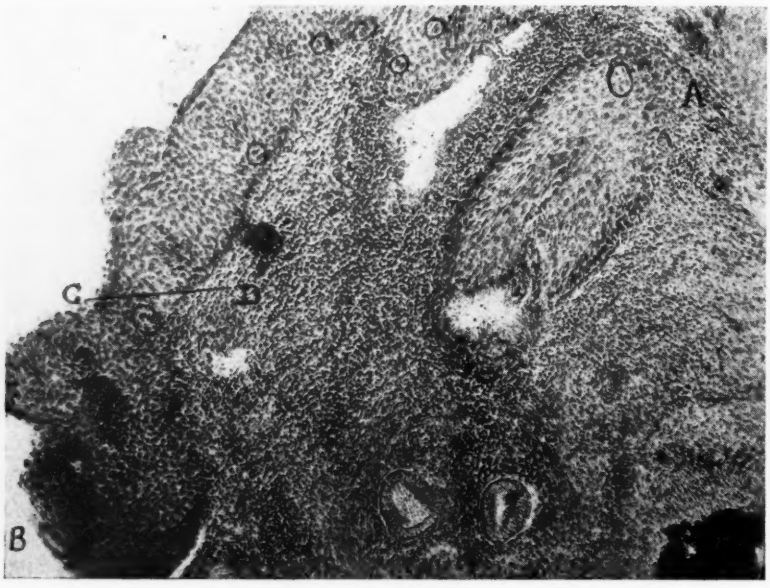



**FIG. VIII. Very Early Cancer of the Cervix.**

The specimen is from tissue removed during repair of a lacerated cervix, cancer not being suspected. At the routine laboratory examination the cancerous change was overlooked, a diagnosis of cervicitis having been made. Four years later the patient died of cancer of the cervix, whereupon the original tissue was reëxamined and properly diagnosed after it was too late.

Study first the strip of epidermis at the left of the picture. Note that the basal layer down to the line *CD* is fairly intact, and that there is comparatively little inflammatory exudate in contact with it. Between *C* and *B* the epidermis is thickened and bulbous and stains darkly on account of the profusion of young intermediate cells. The basal layer corresponding to this part of the epidermis, below the line *CD*, is broken and disintegrated by the copious invading exudate which is in contact with the young intermediate cells. The portion of the epidermis between *C* and *B* is passing or has passed into the stage of malignancy.

The oval area of epithelium on the right of the picture is a cross-section of a piece of epidermis that happened to dip down at this point. The whole area of epithelium is surrounded by invading inflammatory exudates. On the left the basal layer is still holding on well but is actively responding to irritation. At *A* the basal layer has succumbed and the exudate is attacking the intermediate cells, which already show a dangerous reaction.

At the lower tip of the oval figure is a cervical gland, in which can be seen evidence of the inflammation that it is harboring. The circles seen in the picture have been drawn on the photograph to indicate the position of mitotic figures.

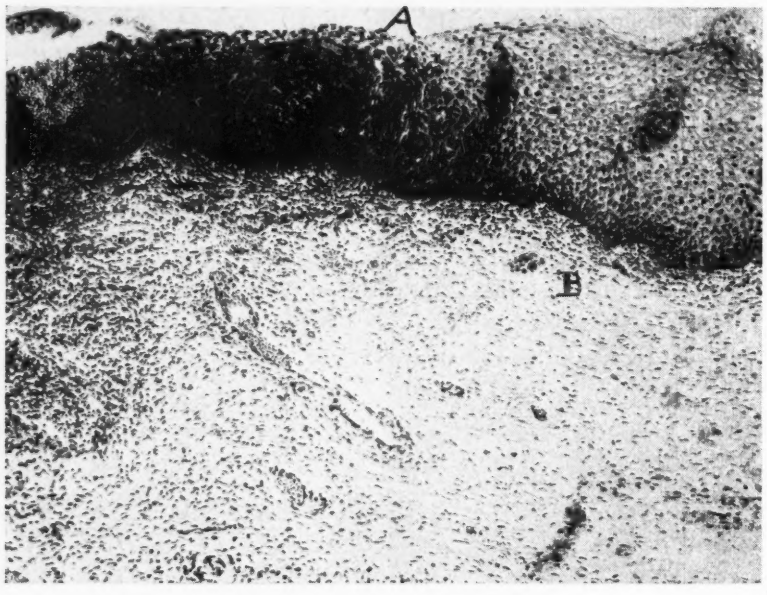



FIG. IX. Early Cancer of the Cervix.

This is also a section from a piece of cervical tissue removed during repair of a lacerated cervix, cancer not being suspected. In this case the cancer was discovered in the routine biopsy. The patient was promptly treated with radium and is now well three years after the operation.

The picture shows the localized influence of inflammatory irritation in producing a cancer. Notice first that beneath the basal layer of the epidermis there is evidence of an invading inflammatory exudate. At the left of the picture it is dense and deep, almost the width of the picture, but it gradually thins out toward the right so that from the point *B* to the right there is comparatively little of it. Now study the epithelium lying above the exudate. From the point *B* to the right, the overlying epidermis is normal excepting that it shows some effects of irritation from the small amount of exudate beneath. That is to say, the whole epidermis is thickened on account of the multiplication of young intermediate cells propagated by the mildly irritated basal layer.

To the left of the diagonal line between *A* and *B*, the picture obviously changes. The basal layer is broken. The young progeny cells are in contact with the invading exudate and in reacting to the stimulus have passed the border-line of malignancy.

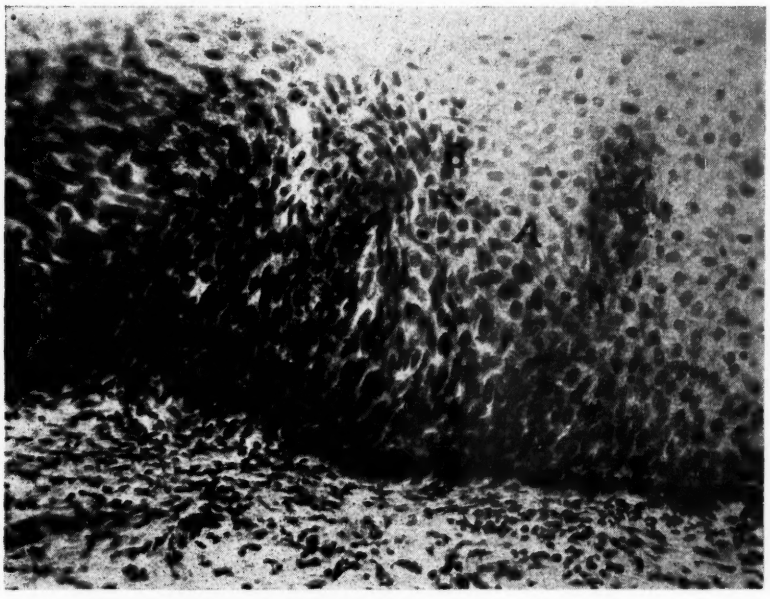
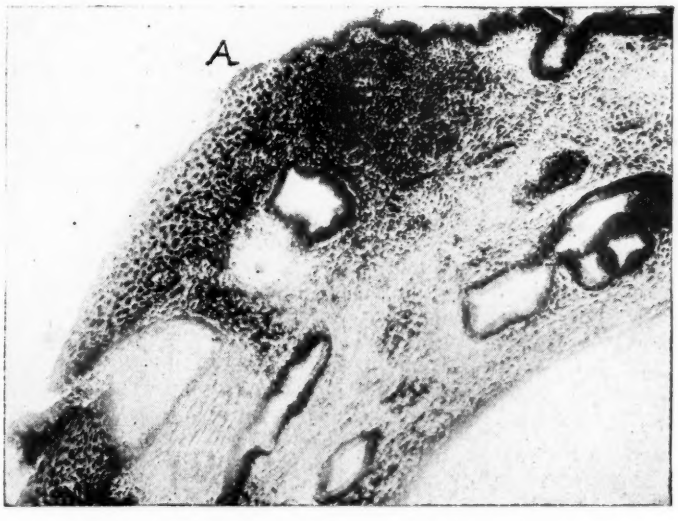



**FIG. X. Early Cancer of the Cervix.**

**This is a high-power view of Fig. IX at the line of demarcation between normal and malignant epithelium. Beneath is the inflammatory exudate. On the right, the basal layer reacting but still intact. Above, the older differentiated squamous cells. On the left, a breach in the basal layer, invasion of the exudate and wild reaction of the young intermediate cells.**

being able to visualize the actual manoeuvres in this conflict, one acquires a fresh enthusiasm for, and increased ability in, the detection of precancerous and early cancerous conditions of the cervix.

The practical purpose of this lecture has been to demonstrate by pathology that cancer of the cervix may be prevented and, in its early stages, cured by timely intervention.




REPAIR OF A CERVICAL EROSION.

FIG. XI. This photograph is introduced to amplify the diagram Fig. V. The process here is incomplete. An erosion has first been covered by columnar epithelium, as is shown by the new glands in the left half of the picture. The squamous epithelium of the portio has then grown upward and epithelialized most of the erosion. The squamous epithelium can be seen at *A* growing *under* the columnar epithelium and replacing it. The inflammatory exudate (seen as the dark dotted patch below *A*) is still active and has invaded the stroma rather deeply. The outcome of the conflict between the exudate and the epithelial structures in this picture looks ominous for the epithelium as the basal layer seems to be giving way.

# LEIOMYOSARCOMA OF THE CERVIX*

BY WILLIAM H. LEWIS, JR., M.D.†

THE literature on lesions of the cervix is as meagre on the subject of leiomyoma, benign or malignant, as it is rich on the subject of carcinoma. The incidence of leiomyomata of the cervix is generally estimated at 3% of all the leiomyomata of the uterus. In 300 cases of uterine myomata at operation, Essen-Möller[1] found 7 cervical leiomyomata. Reel[2], in reporting a case of cervical myoma weighing 7 kgs., estimates that, with careful routine check, the cervical group would average 6% of all removed uterine leiomyomata, a seemingly high figure. Kelly and Cullen[3], in their study of 1674 cases of uterine myomata at the Johns Hopkins Hospital, found 12 with cervical locations, a percentage of 0.7. As a general estimate, it seems that leiomyomata of the cervix do not average more than 1 to 1.5% of such tumors of the uterus.

The incidence of malignant leiomyomata of the cervix raises several questions. Since such tumors are rare, the absolute incidence is very low, and the paucity of cases permits only approximate figures. Modern writers considering cases of sarcoma of the uterus (meaning the fundus usually) invariably say that 12% will be found in the cervix, but this figure seems to be handed down through Ewing[4] from Gessner's report in Handbuch d. Gyn. (Veit, J. Gynäkologis die Diagnostik, 3rd ed., 1899). There are no recent figures for comparison. Kelly and Cullen[3] reported 12 cases of cervical myomata, 2 cases of cervical leiomyosarcoma, 1674 cases of leiomyomata of the whole uterus, and 17 apparent cases of leiomyosarcoma of the fundus, of which 7 showed undoubted clinical malignancy. In their series, therefore, 1 in 7 cervical leiomyomata and 1 in 98 fundal leiomyomata were malignant; thus 1 in 10 leiomyosarcomata of the whole uterus was in the cervix. As occurred in the case here reported, the 2 cases of leiomyosarcoma of the cervix reported by Kelly and Cullen developed in the cervical stump after supra-vaginal hysterectomy for leiomyomata of the fundus. The leiomyomata, removed at operation in these two cases, were later found, on reëxamination, to have sarcomatous changes, histologically at least. Death occurred from metastases in both instances. In Ritter's case, quoted by Kelly and Cullen, 30 days after supra-vaginal hysterectomy a return of growth was found in the cervix and death occurred 6 weeks later. Carcinoma may also develop in a cervical stump; Smith[5] noted 8 cases postoperative, or 0.33% in a series of 2,400 cases of supra-vaginal hysterectomy.

In general, the literature gives evidence that leiomyomata of the cervix are of rare occurrence and are much more likely to be malignant than those of the fundus, especially if developing in a cervical stump.

## CASE REPORTS

The patient, 51 years of age, white, single, was operated on by Dr. D. F. Jones, in 1921, for leiomyomata of the uterus. At operation, a large leiomyoma filled the left side of the pelvis and many smaller leiomyomata were present, making a mass weighing 1 1/2 lbs. A supra-vaginal hysterectomy, including double salpingo-oöphorectomy, was done. The pathological report by Dr. Hartwell at the Massachusetts General Hospital was multiple fibromyomata and hypertrophic endometritis.

In June, 1928, the patient consulted Dr. Jones for the first time since 1921 because of slight diarrhea of ten days' duration and pain in the back. On examination the patient appeared in good condition except for a slight anemia. A lobulated mass was found filling the right side of the pelvis. Dr. Jones made a diagnosis of sarcoma arising from the cervix, as a carcinoma of such size would have produced bleeding.

At operation in July, 1928, a mass resembling a thick-walled cyst and extending above the symphysis was firmly fixed anteriorly and laterally in the pelvis. It was separated from the bladder, ureters, and rectum with great difficulty. Many large firm nodules were present in the peritoneum and pelvis. Both lobes of the liver contained small hard nodules. Convalescence was uneventful. Deep x-ray therapy was given on 6 successive days. Two months later the patient was well except for considerable backache; on rectal examination there was a large firm mass fixed in the pelvis. In November, 1928, death occurred at home undoubtedly from malignancy.

Pathological report of the tumor removed in June 1928 was: Specimen consisted of a large, irregular, nodular mass with thick, fibrous capsule, weighing 585 gms. The body of the mass is composed of moderately firm, gray tissue, on cut section smooth and glistening and showing coarse lobulations and striations. One end is composed of several large and small cysts with thin fibrous septa and containing light brown fluid. Histologically, the tumor is composed of smooth-muscle cells of irregular size, mostly round and spindle-shaped. Some foci are very cellular, others show necrosis. Numerous blood-vessels are present. There are frequent mitotic figures, usually 1 or 2 in the oil immersion field. Microscopic diagnosis: Leiomyosarcoma, rapidly growing.

## DISCUSSION

The development, as in this case, of sarcoma in the cervical stump seven years after removal of leiomyomata of the uterus is indicative of the variations in malignancy of such tumors. Certain uterine leiomyomata may present histological evidence of malignancy, without clinical evidence; a histological classification of leiomyosarcoma is justified by the later development of clinical malignancy in some tumors that had previously appeared as benign. There are no definite criteria for rating the present or potential activity of growth of these tumors. The

*From the Pathological Laboratory of the New England Deaconess Hospital, Boston.

†Lewis—Assistant Pathologist, Pondville Hospital. For record and address of author see "This Week's Issue", page 697.

numerical incidence of mitoses has been utilized as a criterion[6], but mitotic activity is mostly indicative of local growth without reference to the possibility of metastases, and is not necessarily proportional to the degree of clinical malignancy.

SUMMARY

A case of leiomyosarcoma of the cervical stump, developing 7 years after removal of leiomyomata of the uterus and causing death, is reported. It indicates the potential malignant sequelae of uterine leiomyomata. There is need for accurate means of estimating the malignancy of uterine leiomyomata that show histological and clinical evidence of active growth.

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# THE HEALTH DEPARTMENT OF THE PANAMA CANAL*

BY COLONEL WESTON P. CHAMBERLAIN†

THE Health Department of The Panama Canal is an outstanding example of state medicine operating in a relatively small community. This department is of peculiar concern to the Medical Corps of the Army because it was organized by members of that corps and its activities have been administered almost entirely by Army medical officers. The permanent settlement of the Canal Zone by a considerable Caucasian colony (numbering about 18,000 in 1929 and comprising both sexes and all ages) is a matter of great scientific and practical interest not only to the medical profession, but also to tropical agriculture and to sea-borne commerce. Some farseeing individuals consider that in future centuries the tropic lands will furnish an important part of the food supply for a greatly augmented world population. Such developments would undoubtedly imply the presence of large numbers of Northerners in the lower latitudes. The success of our colonizing experiment, carried out in a region formerly so notoriously unhealthful, is a strong link in the growing chain of evidence which supports the modern theorem that the white race can thrive in many parts of the torrid zone, *provided the individual is given the protection which modern science is able to afford.* Our experience has been a convincing demonstration of the postulate that in this age public health is largely a matter of dollars and cents, regardless of latitude. The greater part of the morbidity and mortality formerly attributed to malign influences exerted by the tropical climate was actually due to infection with specific parasites whose invasion is now almost entirely preventable. It is true that certain factors contributory to physical deterioration are often met with in the tropics, the more important of these being isolation, tedium, nostalgia, venereal disease, alcoholic excess, unsuitable food, and poor housing conditions. These unfavorable factors, however, are by no means confined to the torrid zone and, regardless of locality, can be obviated for the most part by wise governmental and community action. As a result of such wise action, the Panama Canal Zone today presents the picture of a satisfied white population, comprising many elderly persons who have lived twenty years or more on the Isthmus, and an energetic young adult element which has grown up and been educated in the tropical environment.

It is of much interest to review the history of the Isthmus of Panama as regards the development of transportation methods, and to consider the influence of disease on the promoters of these developments.

The early Spanish settlers established two routes across the Isthmus, one a roughly paved mule trail from Panama City to Porto Bello on the Atlantic side; the other a similar trail from Panama to the village of Cruces, whence uncertain boat traffic was maintained with San Lorenzo on the Caribbean Sea at the mouth of the Chagres River. These primitive means of transportation had been but little improved up till 1850, when an American Company began to build the Panama Railroad, which was opened for through traffic in 1855. From start to finish the construction forces were beset by serious illness, and it is popularly said that every crosstie represented a life. Great numbers of persons *en route* to the gold fields of California crossed the Isthmus before as well as after completion of the railroad, and of these many suffered disease or death because of the insalubrious conditions.

Few persons realize that the idea of a transisthmian ship canal dates back to the days of Cortes. In the years between 1529 and 1616 several surveys were undertaken, and during the latter half of the eighteenth century renewed efforts were made to select a route. The closing quarter of the nineteenth century produced more definite plans, which culminated in the ill-

*Read at Walter Reed General Hospital on May 19, 1930, before the monthly meeting of officers of the Medical Department of the United States Army located in or near the District of Columbia.

†Chamberlain—Chief Health Officer of the Panama Canal 1924-1929. For record and address of author see "This Week's Issue", page 697.

fated attempt of the French to excavate a waterway under the leadership of de Lesseps, renowned for his success at Suez. Construction work began in 1881. Unhealthful tropical conditions have been brought forward as the cause for the French debacle, and there can be no doubt that disease was a potent factor in the failure of the project. Malaria, yellow fever, dysentery, typhoid, smallpox, uncinariasis, and cutaneous affections were endemic. Each influx of nonimmunes led to a recrudescence of yellow fever, which, by reason of its deadly and spectacular character, excited special terror among new arrivals from the temperate zone. General Gorgas considered that, during nine years, over 2000 white employees died from this cause alone in a Caucasian force which averaged only 1600 for the period. However, malaria was a far more serious obstacle to the construction program because of the great amount of chronic disability it produced among workers of *any race or nativity*. Intestinal diseases also took heavy toll. It has been estimated that between 1881 and 1889 at least 16,000 employees died from all causes, this mortality occurring in a force which averaged only a little over 10,000.

The French sanitary authorities should not be censured for these unfortunate conditions. During the active part of their régime the medical profession had no knowledge whatever regarding the rôle which mosquitoes played in the transmission of the two most serious maladies—yellow fever and malaria. The control of intestinal disease was at that time but little understood. Furthermore, the French company did not possess the legal jurisdiction necessary for enforcing known sanitary measures in adjacent Colombian territory. In spite of the handicap of deadly epidemic disease, the French engineers had accomplished a considerable amount of excavation at the time their efforts ceased because of financial failure.

On May 4, 1904, as a result of purchase, the property of the French company was taken over by the United States and North American personnel began arriving on the Isthmus to continue construction of the canal in accordance with the terms of a treaty negotiated between the United States and the recently established Republic of Panama. This treaty provided for *unrestricted sanitary control* by the United States over a strip of territory extending five miles on each side from the center line of the Canal, *including the Panamanian cities of Colon and Panama.* At that time the modern art of tropical medicine was in its infancy, but during the preceding ten years two fundamental discoveries in the field of epidemiology had paved the way for the elimination or reduction of yellow fever and malaria, the two greatest scourges on the Isthmus. Armed with the magic wand of mosquito control, assisted by an improved conception regarding the prevention of intestinal infections, endowed by treaty with absolute sanitary jurisdiction over a wide area, and provided with almost unlimited funds, the authorities of the United States in the year 1904 were in a position to cope effectively with the disease situation on the Isthmus, a situation which had hitherto defied control.

The first annual report of the Isthmian Canal Commission, made in 1904, states:

> "On the Isthmus are the engineering department, the material and supplies department, and the government of the Canal Zone. . . . The health department, which has the importance of an independent department, has, for the convenience of administration, and because its duties relate largely to the sanitation of the Canal Zone, been made a sub-department of the Canal Zone Government", under the Governor of the Canal Zone, "who represents the commission in all matters relating to Canal Zone affairs . . . and supervises the operations of the Health Department."

By Executive Order of November 17, 1906, sanitation was separated from the Department of Government and was created an independent department under the commission. After the reorganization of the Isthmian Canal Commission on April 1, 1907, Colonel Gorgas was appointed a commissioner (August 12, 1907).

As at first organized, the health department had a chief sanitary officer (Colonel Gorgas), a director of hospitals, a chief quarantine officer, a superintendent for each hospital, a quarantine officer for each terminal port, a health officer for each of the two terminal cities, and a chief sanitary inspector for the Canal Zone.

Since April 1, 1914, when the Isthmian Canal Commission was abolished, the Health Department of The Panama Canal has been under the direction of a Chief Health Officer, who reports directly to the Governor and who has control over all sanitary, quarantine, and medical activities in the Canal Zone and all sanitary and quarantine activities in the cities of Panama and Colon.

The Health Department is now divided into three divisions:

I. Division of Hospitals and Charities, including—
   - Gorgas Hospital (800 beds), Ancon, C. Z.
   - Board of Health Laboratory.
   - Corozal Hospital for the Insane (600 beds), Corozal, C. Z.
   - Colon Hospital (115 beds), Colon, R. P.
   - Palo Seco Leper Colony (100 beds), Balboa, C. Z.
   - Dispensaries for office visits, and as bases for house or ship calls, at—
     - Colon, R. P.
     - Gatun, C. Z.
     - Pedro Miguel, C. Z.
     - Ancon, C. Z.
     - Balboa, C. Z.

II. Division of Sanitation, including—
   - Panama (City) Health Office, Panama, R. P.
   - Cristobal-Colon Health Office, Colon, R. P.
   - Panama Suburban District, which handles antimosquito work for malaria prevention in and about Panama City; office, Ancon, C. Z.

Canal Zone Sanitary Districts—
Northern District, office, Gatun, C. Z.
Southern District, office, Ancon, C. Z.
Ancon-Balboa District, office, Ancon, C. Z.
III. Division of Maritime Quarantine, including—
Chief Quarantine Office (a part of the Chief Health Officer's office), Balboa Heights, C. Z.
Cristobal-Colon Quarantine Station, Cristobal, C. Z.
Balboa-Panama Quarantine Station, Balboa, C. Z.

The Chief Health Officer from the beginning has been an officer of the United States Army Medical Corps, and the superintendents of larger hospitals have usually been from that corps. The Chief Quarantine Officer has always been selected from the United States Public Health Service, but he acts directly under the Chief Health Officer. During canal construction the great majority of the physicians were civilians, but from time to time some positions were filled by medical officers of the Army, Navy, or Public Health Service, and this practice continued for some years following completion in 1914. In 1922 the policy was adopted of replacing civilian physicians *in the hospitals* by officers from the Medical Corps of the Army as rapidly as the civilians severed their connection with The Panama Canal. In the three hospitals there are at present 32 Army medical officers, 1 Army dental officer, and 7 remaining civilian physicians. In dispensary, quarantine, and leper service, as well as in the health offices of Panama and Colon, all the physicians are civilians, the total so employed at present being 21. Eight civilian dentists, working without salary at schedules fixed by the Governor, serve the dental needs of the Canal Zone residents. In addition the Health Department requires approximately 115 graduate American nurses, 90 other white employees, and 825 colored employees.

The appropriations made by Congress for the Panama Canal include three entirely distinct items: (a) Maintenance and Operation; (b) Civil Government, and (c) Sanitation. For several years the appropriation for Sanitation has been $670,000 annually. The earnings of the Health Department, amounting to $901,000 in 1928 and to $991,000 in 1929, are added to the appropriation, thus providing an annual budget of approximately $1,600,000 for the Health Department. The term "sanitation," as used in the Congressional appropriation bills, includes not only sanitation proper, but also maritime quarantine and operation of Canal Zone hospitals, dispensaries, insane asylum, leper colony, charities, and cemeteries; it furthermore includes street cleaning, garbage collection, and garbage disposal in the cities of Panama and Colon.

I will now describe briefly some of the principal activities which engage the attention of the Health Department of The Panama Canal.

Expert knowledge regarding mosquitoes and their habits is very essential. The Assistant Chief Health Officer has made himself proficient in this branch of entomology and several sanitary inspectors have been taught to identify specimens in the adult or larval stages. About 135 species of mosquitoes have been found on the Isthmus. Of these only the *Aedes aegypti* and four species of anopheles (*A. albimanus, A. tarsimaculatus, A. bachmanni,* and *A. evansi Brethes*) are of any sanitary importance. Two or three other species (notably *Aedes taeniorhynchus* and *Mansonia titillans*) are such annoying pests that the Health Department endeavors to get rid of them in connection with its campaign against the disease-carrying varieties.

The story of yellow fever elimination on the Isthmus of Panama has received so much publicity that it will be mentioned only briefly. In 1904 the numberless artificial water containers of every variety in Panama and Colon cities, and in the intermediate villages of the Canal Zone, afforded ideal conditions for the growth of *Aedes aegypti.* Continuous high temperature permitted unhampered development of yellow fever organisms in these mosquitoes. The prompt establishment of public water supplies by The Panama Canal, and the piping of this water into every house, made possible the early abolition of cisterns, tanks, rain-barrels, water jars, and roof gutters. Incessant sanitary inspection almost completely eliminated breeding in small containers, such as vases, plant pots, ant-guards, tin-cans, bottles, holy-water fonts, yard drains, ditches, etc. As a result, yellow fever soon disappeared, the last case to develop locally having occurred in Colon on May 17, 1906. Several persons sick with yellow fever have since been brought to the Isthmus, the latest being in 1919, but there was no spread of the disease from these patients. Continued efforts are made to maintain a low *Aedes aegypti* index in the Canal Zone and in Panama and Colon, but these efforts are not as energetic as would be the case if yellow fever were now a serious menace.

Malaria prevention has been, and still continues to be, one of the largest problems presented to the health authorities on the Isthmus. It is a very much more difficult and expensive problem than yellow fever control. Conditions of soil and climate are ideal for the breeding of dangerous anopheles in large numbers. Some publicity was once given to statements that malaria had been eradicated from the Canal Zone, but this idea is entirely erroneous. To free the entire Canal Zone from paludism would be prohibitively expensive and no attempt has ever been made to accomplish such freedom. Our anti-malaria efforts are confined to the *vicinity of the more important towns, within which nearly all of the employee population is concentrated.* Residents of the Canal Zone not connected with the Government, such as native farmers, are required to live at least one mile beyond the borders of the sanitated towns.

The campaign against malaria in the Canal Zone and in the cities of Panama and Colon has been vigorously waged from the outset, but the methods of attack, as well as the degree of success, have varied materially as time went on.

During construction days most of the work had to be of a very temporary nature, and particular stress was laid on clearing away the jungle, on screening houses, on killing adult mosquitoes, on the use of larvicides, on prophylactic doses of quinine, and on prolonged treatment of malaria cases. Clearing away grass and jungle as a health measure was wisely abandoned about 11 years ago; it is now well known that shade provided by vegetation prevents the breeding of several dangerous species of anopheles and that removal of vegetation will often result in the development of malaria-carrying mosquitoes in pools or streams where only harmless ones had bred before. Larvicides are employed to a less extent each year and their use is now mainly confined to *bodies of water which cannot be obliterated.* Fuel oil has replaced other chemical agents because of its cheapness, its ease of application, and its effectiveness against all species. Preliminary treatment of every malaria case *in hospital,* together with *prolonged compulsory after-treatment,* is still insisted on for the protection of both the patient and the public.

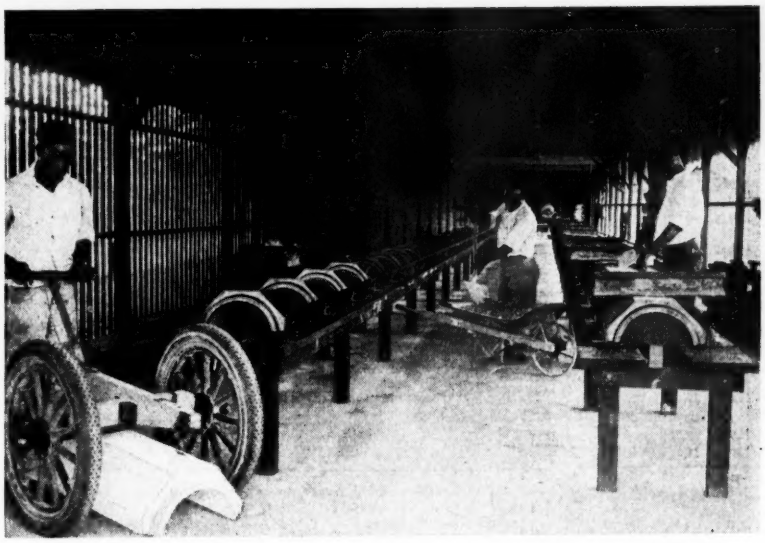
Under the more stable conditions existing since completion of the Canal in 1914, increasing emphasis has been laid upon the *final obliteration of mosquito-breeding areas by means of permanent drainage.* Drainage may be divided into two main categories, viz.: (a) *preliminary drainage* by means of simple earth ditches and (b) *permanent drainage,* which is achieved by the installation of subsoil tile or concrete-bottomed drains. The open earth ditch is normally the first step in attaining real permanency.

Panama Canal Zone. View at low tide of a 20-inch concrete drain passing under a beach and its sand dunes for the purpose of draining a brackish lagoon which bred vast numbers of malaria-carrying mosquitoes.

The territory sanitated against malaria has been steadily increased, especially during the last ten years. Drainage systems now extend for distances ranging from one to three miles beyond the borders of the towns. Just where to stop in the program of expanding and improving the sanitated areas is a question not yet decided. The cost of extension increases somewhat more rapidly than the square of the radius, and the prospect is not good for any marked decrease of the already very low malaria rate among employees, particularly in view of the fact that investigation shows a large proportion of the total infections to have been contracted,

presumably, while the individual was *outside the sanitated districts* at night. At present anopheles mosquitoes are so rarely found in the Canal Zone towns that it is becoming doubtful whether the screening of government houses for sanitary reasons alone can be justified on economic grounds. In Panama and Colon window screens are unusual and hundreds of Americans spend their evenings in unscreened places of amusements without ill results.

Panama Canal Zone. Health Department Tile Plant. Showing method of manufacturing 6-inch concrete tile pipe used for subsoil drains in anti-mosquito work. Tiles are 12 inches long and two men make about 400 daily.



Panama Canal Zone. Health Department Tile Plant. Showing method of making concrete sections or inverts used in the bottoms of open drainage ditches. Sections are 3 feet long, have interlocking ends, and provide a channel 14 inches across.

In all of the more recent drainage programs carried out by the Health Department of The Panama Canal the first step has been to map out each main line or lateral and then to plot the gradients on cross-section paper after survey of the terrain with a wye-level. These two procedures are for the purpose of obtaining the best available flow throughout the entire system, and such preliminary study is especially important when the land to be drained is nearly flat. Wherever conditions are suitable, the installation of rock-covered subsoil tile pipe is the method of choice for permanently drying up a breeding area. A grade of at least 4 feet in a thousand is essential for proper operation of a tile system. The tiles used are one foot in length, either 6 or 8 inches in diameter, and are made of concrete in the Health Department Tile Plant. They are placed loosely end to end in a narrow trench about two feet deep, which is

then filled with broken rock. Tiles laid in this manner rarely become obstructed by roots or silt, even after many years, and practically no upkeep is necessary.

Concrete-bottomed open drains are made by installing in the bottom of an earth ditch a series of precast concave sections or inverts laid accurately to grade. These inverts are manufactured in the Health Department Tile Plant, being 3 feet long with a hemi-cylindrical channel 14 inches across; they have interlocking male and female ends. As compared with a simple earth ditch, the concrete-bottomed drain takes off the water more rapidly and completely, is easier to clean, and is less expensive to maintain. It operates satisfactorily on terrain where the grade is too flat for the use of subsoil tile.

During the period 1926-1928 approximately $110,000 per year was spent by The Panama Canal for antimosquito work directed toward the prevention of malaria. A large part of this expenditure was for permanent or semi-permanent drainage systems. As an example of the extent of this class of work, it may be said that during the 5-year period between July 1, 1924, and June 30, 1929, the Health Department installed approximately

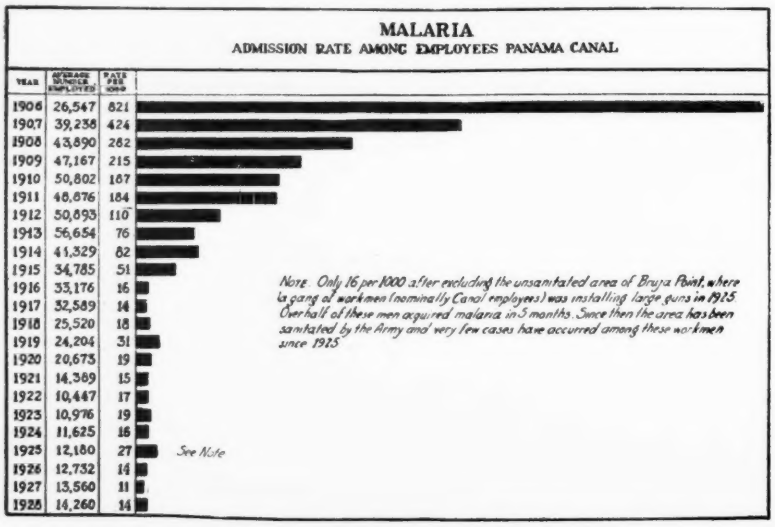

MALARIA
ADMISSION RATE AMONG EMPLOYEES PANAMA CANAL
YEAR
AVERAGE NUMBER EMPLOYED
RATE PER 1000
1906 26,547 821
1907 39,238 424
1908 43,890 282
1909 47,167 215
1910 50,802 167
1911 48,876 184
1912 50,893 110
1913 56,654 76
1914 44,329 82
1915 34,785 51
1916 33,176 16
1917 32,589 14
1918 25,520 18
1919 24,204 31
1920 20,673 19
1921 14,389 15
1922 10,447 17
1923 10,976 19
1924 11,625 16
1925 12,180 27
1926 12,732 14
1927 13,560 11
1928 14,260 14
Note. Only 16 per 1000 after excluding the unsanitated area of Bruja Point, where a gang of workmen (nominally Canal employees) was installing large guns in 1915. Over half of these men acquired malaria in 5 months. Since then the area has been sanitated by the Army and very few cases have occurred among these workmen since 1915.
See Note

Chart No. 1.—Shows reduction in admission rates from malaria among employees of The Panama Canal and Panama Railroad.

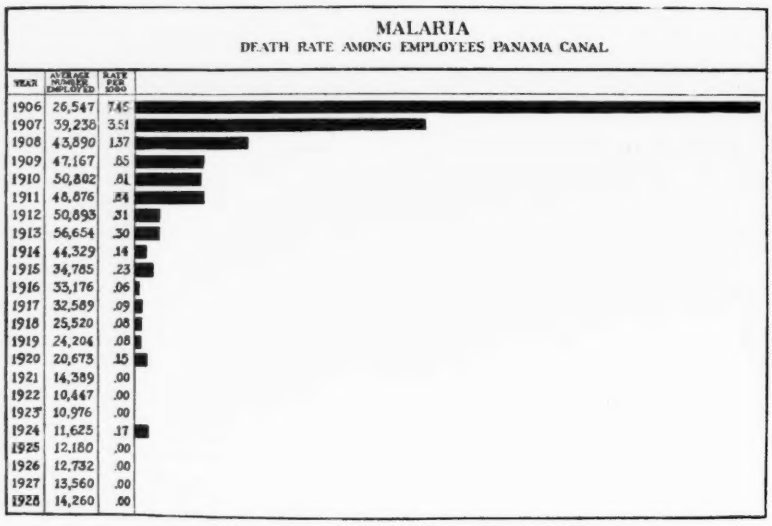



Chart No. 2.—Shows reduction in death rates from malaria among employees of The Panama Canal and Panama Railroad.

**10½ miles of concrete-bottomed open drains, costing about $4115 per mile;**
**36 miles of 6- or 8-inch subsoil rock-covered tile drains, costing about $1800 per mile for 6-inch and $2425 per mile for 8-inch;**
**112 miles of open earth ditch, costing about $315 per mile.**

In addition to the sanitary program carried out by the Health Department of The Panama Canal, there is a large amount of anti-mosquito work done by the United States Army at a cost of approximately $50,000 per year for labor and material. This expenditure is for the protection of the military garrisons, many of which are located beyond the areas sanitated by The Panama Canal authorities. In general, this work

is handled in the same manner as that done by The Panama Canal, and the two programs are coördinated by conference between the Chief Health Officer and the Department Surgeon.

Permanent drainage works represent a considerable capital investment, but are economical in the long run because the upkeep is much less than is the case when simple earth ditches or larvicides are relied upon. Furthermore. the probability of complete mosquito control is greatly enhanced when permanent drains have been installed.

The results attained from anti-malarial sanitation on the Isthmus have been highly satisfactory. From an admission rate of 821 per 1000 employees, in 1906, the rate was brought down progressively to 51 in 1915 and to 14 in 1917. Since the latter date it has ranged between 11 and 31. The average rate for the years 1926, 1927, and 1928 was 13 per 1000, the lowest for any 3-year period on record. During the 9 years, 1921 to 1929, inclusive, there were but 3 deaths from malaria in an employee force averaging 13,000 persons. Two of these were in 1924 and 1 in 1929.

The control of yellow fever and malaria are the spectacular achievements which particularly attracted world-wide attention to the sanitary administration of The Panama Canal. However, there were originally several other tropical diseases to combat, as well as practically all of the maladies common to the temperate zone. The success achieved in all phases of preventive medicine on the Isthmus is well illustrated by the reduction in mortality effected in the Canal Zone, and in the terminal cities of Panama and Colon with their crowded negro or mestizo populations. The death rate for Colon in 1906 was 51; it now ranges from 12 to 14. For a variety of reasons the rate in Panama City is not quite so low, but it has come down from 65, in 1905, to an average below 18 during the last 7 years, a figure comparing favorably with rates for some of our Southern cities.* In the Canal Zone the death rate for many years has ranged between 8 and 9 per 1000. Tropical disease does not occupy a place of much importance among the causes of death in the areas controlled by the Health Department. Tuberculosis, pneumonia, diarrhea, syphilis, cancer, nephritis, apoplexy, and heart disease head the list in the mortality tables, just as they do in the United States. Infant mortality rates, both in the Zone and in Panama and Colon, although still too high, have been enormously reduced during the last 10 years.

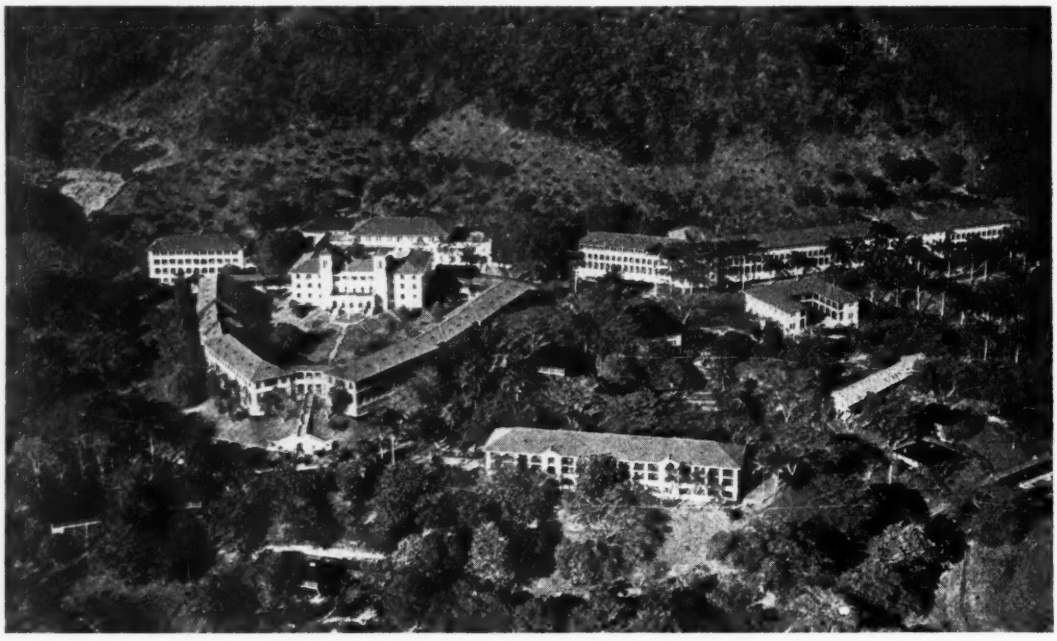
Panama Canal Zone. Garbage dump, showing method of disposal of garbage for a population of about 90,000 people. The day's collection is sprayed with crude oil and then plastered with mud, which is oiled daily for a period of 8 or 10 days to prevent emergence of flies. Flies and rats are rarely seen on these dumps.

*This rate of 18 is based upon a population of 74,400 for Panama City in 1930, as shown by the recent census.

The Canal Zone towns and the cities of Panama and Colon are provided by The Panama Canal with an abundant supply of excellent water piped into every house. Raw water, taken from Gatun Lake, is treated by sedimentation, aeration, filtration, and chlorination, after which its potability is beyond suspicion. Modern sanitary sewer systems have been installed and cesspools or pit-latrines are prohibited except in a few isolated situations. Food production and distribution are carefully controlled. Eating places are kept under continuous observation. Milk comes from inspected dairies and is pasteurized under supervision of Canal Zone veterinarians. Garbage and manure are disposed of by the Health Department. Flies are infrequent. Public swimming pools are adequately treated in order to prevent the transmission of infection. As a result intestinal diseases are reduced to the minimum. During the last 6 years (ending with 1928) there has been an average of less than 2 deaths a year from typhoid fever originating in a population of about 150,000.

Acute respiratory diseases, which were such a serious factor as a cause of death among the first construction gangs, have become of much less importance, but, nevertheless, pneumonia vies with tuberculosis, from year to year, for first place on the mortality tables. The incidence of tuberculosis has been materially reduced, but this disease is still a most pressing problem, particularly in Panama and Colon. Not much further reduction of tuberculosis can be expected until improved economic conditions in Panama and Colon result in less crowding, better food, and up-to-date sanatorium treatment. Diphtheria, though occurring to some extent, is a very rare cause of death except in Panama City, where there are from 6 to 8 fatal cases yearly in a population of about 75,000.

Ever since 1904 the Isthmus has been threatened with bubonic plague from many sources, some of which are distant less than five days' steaming. However, only two human cases have developed, both being in 1905, and no infected rats have been found since that date. Precautions against the introduction of plague have been unceasing and are exercised along many lines. The wharves and most of the warehouses in Balboa and Cristobal are of special rat-proof construction, mainly concrete and iron. Nearly all houses in the Canal Zone are of a rat-proof type. In Panama and Colon new structures must be rat-proof and alleys or patios must be paved with concrete. Old houses, when undergoing repair, must be brought up to the standard required for new construction. In a few years every building will be of a type designed to furnish the minimum of harborage for rats.



Panama Canal Zone. Airplane view of Gorgas (formerly Ancon) Hospital. This institution is built of concrete and has a capacity of 800 beds.

Materials of every kind, whether stored out of doors or in shops or warehouses, must be kept on racks elevated above the ground or floor and arranged in convenient aisles to facilitate detection of rat-harborage. Aside from the careful collection and disposal of garbage, special attention is given to storing and handling edible articles in a manner calculated to prevent rats and mice from obtaining ready access to food. Continual trapping of rodents is carried on, primarily with a view to obtaining specimens for laboratory examination; from 6000 to 12,000 of these animals are autopsied annually.

Steamships visiting the Canal Zone travel

over about 138 distinct routes, of which approximately 50 include ports infected, or suspected of being infected, with bubonic plague. The great majority of these ships are fumigated at regular intervals with a view to destroying rodents, and all, regardless of ports of call, are required, while in Canal Zone waters, to breast off 4 feet from the pier, to use rat-guards on all lines, and to keep gangways lighted and guarded at night. Trapping of rats on the ships is also carried out while they are in port.

The medical institutions maintained by the Health Department of The Panama Canal are quite notable in their physical features as well as in their equipment and the high grade of professional service provided. The Canal Zone hospitals, as well as the private hospitals in Panama City and Colon which were established by former Canal Zone physicians, have gained an enviable reputation in the adjacent Latin-American countries.

Ancon Hospital was built by the French, operated by Catholic sisters, and passed to the United States with the other property of the French Canal Company on May 4, 1904. The original buildings were of frame construction, unscreened. With repairs, screening, and some additions they served the needs of the American forces during the period of Canal construction. Between 1915 and 1919 the old French buildings were replaced by attractive reinforced concrete structures at an expenditure of about $2,000,000. Many important and costly changes have been made during the last 5 years, including a new medical clinic, a dental clinic, an increase in the number of private rooms, and a large addition to the nurses' home. Located in beautiful grounds and overlooking the Pacific, the institution presents a picture of unusual tropical charm. In 1928 the name was changed from Ancon to Gorgas Hospital as a result of a Joint Resolution of Congress.

Gorgas Hospital has a normal capacity of 800 beds and is fully prepared for definitive treatment of all classes of patients except the insane. Expense has not been spared in providing the latest type of furnishings and equipment, including radium. The Superintendent has always been an officer of the Medical Corps of the United States Army. The staff of the hospital and board of health laboratory includes approximately 29 physicians, 95 graduate nurses, 12 interns, and 275 other employees. Of the physicians 24 are now officers of the Army. The primary purpose of the hospital is to serve the needs of the employees of The Panama Canal and Panama Railroad and their families; a secondary purpose is to care for the Army, the Navy, and the other Government personnel on the Isthmus, and their dependents. Ordinary treatment is free for employees, but there is a small charge for subsistence and for private rooms. Charges for the families of employees are based upon the pay of the head of the family, the rates being reasonable. Gorgas Hospital also treats many private-pay patients from adjacent countries. Of late the patient population has averaged about 500 and the institution in 1928 was 54% self-supporting.

Adjacent to Gorgas Hospital is the splendid building of the Board of Health Laboratory, which is equipped to carry out any type of technical investigation. The laboratory operates an undertaking department and a two-retort oil-burning crematory. Everything connected with the disposal of the dead in the Canal Zone is handled by the Health Department, including management of the cemeteries.

Corozal Hospital provides for the insane of the Canal Zone and of the Republic of Panama, being reimbursed by the Republic for its cases at the rate of $0.75 per patient day. The mentally unsound were handled in special wards of Ancon Hospital from 1907 until 1915. Then a branch hospital for this class of cases was established at the village of Corozal, about 2 miles from Ancon. Gradually the Corozal institution became practically independent and it was officially separated from Gorgas Hospital by Executive Order in 1928. The insane patients now exceed 600, about three-fourths of whom are Panamanian cases. Attached to the hospital is a home for non-insane chronically ill or crippled residents of the Canal Zone, who number about 70.

The professional staff of Corozal Hospital consists of 3 physicians (all Army officers), 6 female nurses, and 4 male nurses. Care of the inmates is up-to-date and occupational therapy in shop, laundry, or field is an essential feature of the treatment. The institution operates extensive gardens and a modern dairy, the latter furnishing daily over 500 quarts of high-grade pasteurized milk, which is mostly dispensed on physicians' prescription to Canal Zone infants, children, or invalids. The hospital is about 75% self-supporting.

Marked progress has been made during the last 5 years in replacing the old and unsatisfactory frame structures at Corozal. A concrete ward building capable of holding 150 disturbed females, a concrete dining-room and kitchen building for the entire institution, a concrete and frame laundry, and a new boiler house have been completed. Extensive alterations and improvements have been made in the dairy and its equipment. These combined improvements represent an expenditure of nearly $300,000. This year (1930) $200,000 is being made available by Congress for another concrete ward building urgently needed to house about 200 disturbed males; construction is expected to start in June, 1930.

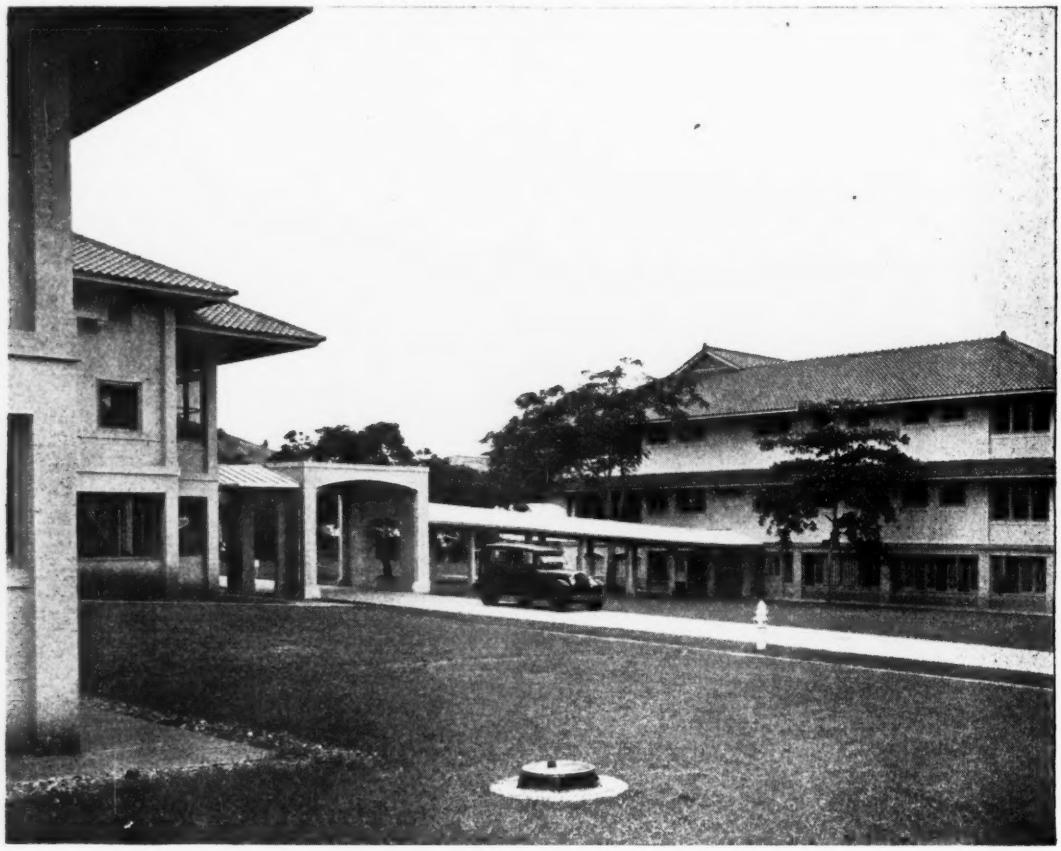
Colon Hospital, in the city of Colon, is operated for the same classes of patients that are handled at Gorgas Hospital. Formerly it was used largely as an emergency institution, but of late an increasing number receive definitive

treatment there and a large amount of elective major surgery is done. Surplus cases are evacuated by daily hospital car to Gorgas Hospital. The original frame buildings were taken over by The Panama Canal in September, 1904. The present structures of reinforced concrete were completed in 1916 and are attractively located on Colon Beach, exposed to the cooling breezes from the Caribbean. During the last two years rearrangements and alterations have increased the capacity from 80 beds to 140 beds, most of which are constantly filled. The professional staff consists of eight physicians, five of whom are Army officers, 14 graduate female nurses and one pharmacist; there are about 50 other employees.

A leper colony was established in 1907 at Palo Seco, on the west side of the Canal about 3 miles from Balboa. This institution cares for the lepers of the Canal Zone and of the Republic of Panama, being reimbursed by the Republic for its cases at the rate of $0.75 per patient day. During the last few years the number of inmates has averaged 100, of whom about three-fourths are from the Republic of Panama. All of the older buildings are one-story frame structures. In the last four years, a two-story kitchen-mess-hall building and a two-story ward-operating-room building have been completed at a cost of about $31,000. Both are largely of concrete construction. Patients are treated with derivatives of chaulmoogra oil manufactured in the Board of Health Laboratory. During the last ten years several have been paroled as apparently cured.

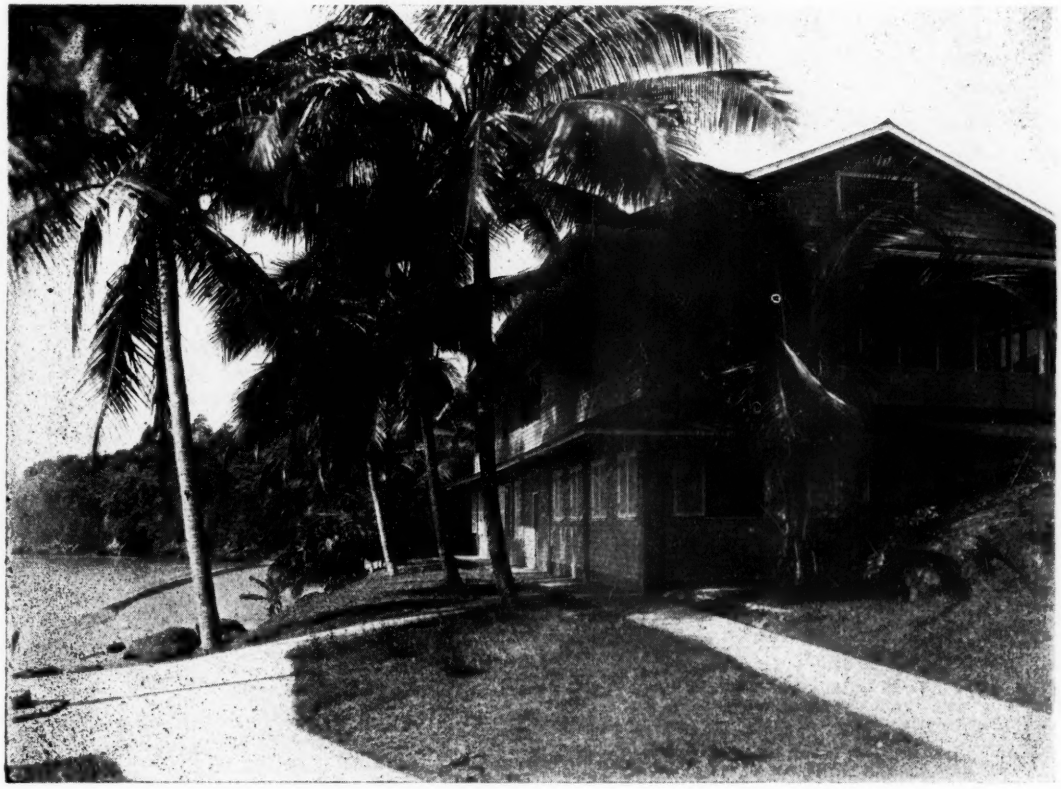
Dispensaries are maintained at Colon, Gatun, Pedro Miguel, Balboa, and Ancon, all being housed in attractive and well-equipped concrete buildings. Civilian physicians employed by The Panama Canal are constantly on duty in these dispensaries and render office service, free of charge, to employees of The Panama Canal or the Panama Railroad and their families. These physicians also make necessary visits to the houses of employees and, upon request, to vessels transiting the Canal. Cases requiring consultation, specialist treatment, or hospital care are referred to Gorgas or Colon Hospital.

The quarantine service of the Canal Zone is entirely distinct from that of the United States. It is under the immediate direction of a Chief Quarantine Officer, who is a selected member of the United States Public Health Service detailed for duty with The Panama Canal and reporting directly to the Chief Health Officer of the Canal. Quarantine offices, provided with



Panama Canal Zone. Two of the new concrete buildings at Corozal Hospital for the Insane. On the right is ward for 150 disturbed females and on the left the kitchen-mess-hall building.

adequate personnel for boarding and inspecting incoming ships, are maintained in Cristobal and Balboa; the latter office operates an extensive quarantine station capable of sheltering and feeding 100 first-class and 400 steerage passengers. At both terminals of the Canal, facilities are available for fumigating vessels with a view to the destruction of rodents and insects. In addition to their professional duties, the quarantine officers also administer the immigration laws of the Canal Zone and the Republic of Panama. During the year 1928 the quarantine service handled 7437 vessels, an average of more than 20 per day. The crews and passengers collection, and garbage disposal. All of the expenses of these offices, including salaries, wages, and supplies, are paid for by The Panama Canal, except that in the matter of street cleaning and garbage handling, the Canal pays one-fourth of the cost and the Republic three-fourths. It will be seen, therefore, that the United States give to Panama City and Colon a complete municipal health service, the original idea being that such sanitary control was necessary to protect the employees of The Panama Canal and the crews and passengers of transiting ships. The sanitary code for Panama and Colon was prepared by the Chief Health Officer of The Panama



Panama Canal Zone. Palo Seco Leper Company. Showing one of the new buildings. Pacific Ocean on left.

actually examined numbered 334,000. One hundred and twenty-eight vessels were fumigated.

One of the interesting features of the Health Department is the unique power which the treaty gives to it with regard to the sanitary administration of Panama City and Colon, these being located in Panamanian territory and entirely outside the jurisdiction of The Panama Canal in all respects except sanitation. In each of these cities there is a Health Office, presided over by a full-time American Health Officer, who has on his staff several American veterinarians and sanitary inspectors, together with a sufficiency of native foremen and laborers. These two officials administer every phase of municipal sanitation, including street cleaning, garbage Canal and was then promulgated as an Executive Decree by the President of the Republic of Panama. The Health Officers of the two cities are vested with great and arbitrary powers, which permit them to enforce the sanitary regulations without recourse to or interference from the Panamanian courts. The results, on the whole, have been highly satisfactory.

In conclusion, it may be said that we have today on the Isthmus of Panama a permanent white colony, leading a life of health and comfort in a region which formerly was regarded as the pest-hole of the world. The population includes both sexes and all ages. There are many active young adults who have grown up from childhood or infancy in this environment.

At a time when the first quarter century of the Canal Zone colonizing experiment has been completed, it is gratifying to pause a moment for the purpose of considering the happy results which have been achieved under a system of state medicine established and largely administered by members of the Medical Corps of the United States Army. While viewing the fortunate outcome of this tropical venture, we should not forget to render proper tribute to those pioneers, whether Americans or French, who, facing the terror of strange diseases, gave their lives in order that the world might be provided with modern means of transit from sea to sea.

## REMOVAL OF ENTIRE LOWER DENTAL PLATE FROM THE OESOPHAGUS

### (Case Report)

BY WYLIE L. COLLINS, M.D.*

H. B. White, male, age 50 years. Seen for the first time, at home, on the morning of September 8.

The patient complained of inability to swallow and coughing.

F. H. Irrelevant.

P. H. Irrelevant.

P. I. Patient gave a history of drinking on the previous day but said that he was not drunk. Vomited almost continuously during the night.

P. E. An elderly white male, with hoarse voice, coughing and choking continuously, and raising quantities of thin mucus. Color good, but the patient was apparently very nervous and uncomfortable.

Pulse 86, respirations 17, temperature not taken due to discomfort of patient. General condition good. Examination of mouth showed all teeth missing. Upper plate could be accounted for, but lower could not be found. Inspection of throat showed nothing remarkable.

Upon inserting the first finger in throat, the tip of what seemed a dental plate could be felt. Patient was referred to The Nantucket Cottage Hospital, where x-ray showed what appeared to be a dental plate in the upper oesophagus.

Without anaesthesia and with gloved hand, the tip of plate could be grasped between index and mid fingers, but was wedged solidly and could be moved only with difficulty.

Several attempts were made at removal with fingers and also with clamps. Finally and with considerable difficulty plate was grasped between index and mid fingers of right hand and removed intact.

Patient ran slight temperature for two days, but with the exception of spasmodic coughing, convalescence was uneventful, and he was discharged relieved one week after admission.

Lower dental plate removed from the oesophagus.

*Collins—Interne, III Surgical Service, Boston City Hospital July 1926 to March 1928. For record and address of author see "This Week's Issue", page 697.

## MORTALITY REPORTS

The Department of Commerce telegraphic returns from 78 cities with a total population of thirty-five million for the week ending September 20 indicate a mortality rate of 10.4 as against a rate of 10.0 for the corresponding week of last year. The highest rate (15.4) appears for Atlanta, Ga., and the lowest (5.1) for Waterbury, Conn. The highest infant mortality rate (14.9) appears for Dayton, Ohio, and the lowest for Bridgeport, Conn., Fall River, Mass., Schenectady, N. Y., Somerville, Mass., and Spokane, Wash., which reported no infant mortality.

The annual rate for 78 cities is 12.1 for the thirty-eight weeks of 1930, as against a rate of 12.9 for the corresponding weeks of 1929. The rates published in this summary are based upon midyear population estimates derived from the 1930 census.

# NEW HAMPSHIRE MEDICAL SOCIETY

## CLINICAL ASPECTS OF ACUTE OTITIS MEDIA AND COMPLICATIONS, FROM VIEWPOINT OF THE GENERAL PRACTITIONER*

BY RAYMOND H. MARCOTTE, M.D., NASHUA†

THE entire middle ear, from the pharyngeal orifice of the Eustachian tube to the inner surface of the membrana tympani, is covered with mucous membrane, supplied with glandular structures to keep it moist.

The middle ear is an air-containing chamber connected with the external air by way of the Eustachian tube the function of which is to maintain the pressure within the cavity equal to the atmospheric pressure.

Repeated examinations of the oropharynx and nasopharynx in healthy individuals, reveal the presence of various forms of bacteria, harmless and otherwise; the middle ear, being in practically direct communication with these, would lead one to believe it is never free from bacteria and this has been proven by investigations carried out by Hasslauer.

When the mucous membrane lining is normal these germs are not present in sufficient quantities nor are they sufficiently active to cause any disturbance. If however, the circulation is disturbed by some temporary congestion of mucous membrane within the middle ear, such as exposure to cold, chilling of body, etc., it renders the tissues more vulnerable and the organisms proliferate giving rise to characteristic symptoms.

Then, again, if the patency of the Eustachian tube is disturbed, we get an interference with the air entering the middle ear, and oxygen is absorbed from the latter, creating a partial vacuum; the drum then becomes retracted to compensate for the negative pressure. When the limit of retraction is reached, nature again attempts to compensate by diminishing the space through a transudation of serum. In other words, nature interferes by presenting a mechanical means of obliterating a vacuum, and the serum will not be in excess of the dimensions of this space. Therefore, the drum membrane will not bulge to accommodate an excess of fluid. If this is translated into a clinical interpretation, it means that, even though the drum is inflamed, if it does not bulge but is in normal position or even retracted, we have merely a transudate and no purulent exudate, therefore no indication for a paracentesis. On the other hand, if the transudate becomes secondarily infected by bacteria, we then have an exudate, where fluid is produced until the bacteria are destroyed, usually in excess of the dimensions of the cavity and the drum bulges outward, until it either ruptures from increased pressure or erosion. So clinically, a bulging drum indicates an accumulation of exudate or pus and requires early paracentesis.

### PATHOLOGY

There are primarily four types of otitic infections, which we shall enumerate as:

(1) Salpingitis (of Eustachian tube)
(2) Catarrhal otitis media
(3) Purulent otitis media
(4) Mastoiditis.

This is not a classical classification, but it may help us to better understand the various manifestations of infection and more properly interpret them.

(1) Salpingitis usually occurs as an extension of infection from the pharynx; this, in turn, may bring about

(2) Catarrhal otitis media, where we have a hyperemia of tissues lining the middle ear cavity with or without a serous transudate due to the neighboring infection; if the process goes on, we have a more severe reaction to the inflammation, with a resultant

(3) Purulent otitis media where the inflammatory exudate is due to a direct infection within the ear cavity and pus formation which, in turn may extend into mastoid cavity and then we have an

(4) Acute mastoiditis.

Kopetzky has drawn an analogy between the otitic organ and the respiratory system which serves to illustrate this extension of infection, namely

| | |
|---|---|
| (1) Eustachian tube | (1) Trachea |
| (2) Middle ear | (2) Larger bronchi |
| (3) Mastoid cells | (3) Pulmonary alveoli. |

Tracheitis may be associated with more or less bronchitis and bronchitis may be associated with more or less alveolar congestion which may subsequently develop into pneumonia. So in the ear, pharyngitis may cause salpingitis of the Eustachian tube, which may in turn produce acute catarrhal otitis media, purulent otitis media and mastoiditis.

### ETIOLOGY

Acute infections are responsible for a large percentage of otitis because they are accompanied by an acute upper respiratory infection and

*Read before the 139th Annual Meeting of the New Hampshire Medical Society, held at Concord, May 14, 1930.

†Marcotte—For record and address of author see "This Week's Issue", page 697.

organisms may reach the middle ear by way of the Eustachian tube. But in general systemic infections, such as diphtheria, measles and influenza, the middle ear organisms may be blood-borne or lymph-borne. This presents two favorable conditions for the development of ear infection; namely, the introduction of numerous organisms in the ear cavity and the lowered resistance due to the general debility accompanying systemic infection.

There are two types of O.M.P.A.*

(a) That of short duration with perforation, discharge and healing.

(b) That of longer duration with perforation, discharge and long continued otorrhea.

Measles usually causes the first and scarlatina the second type frequently with bone necrosis. So the middle ear of scarlet fever is more apt to be complicated by mastoiditis and should be watched more carefully. A point worth bringing to your attention now, is that once the immediate danger of mastoiditis is passed, one should not be careless of the aural discharge which continues; we all hope time will heal the lesion. Yet, frequently, there develops a loss of hearing later, and there may be an unseen approach of infection toward the endocranium. Intensive local measures or a simple mastoidectomy performed at the proper time, might avoid an eventual fatality from meningitis, brain abscess or sinus thrombosis, after many years of apparent harmless discharge.

Diphtheria, influenza and pneumonia may cause otitis of two varieties:

(a) Specific infection by Klebs-Loeffler bacilli, influenza bacilli, or pneumococci or,

(b) Secondary infection by organisms in the nose and throat.

In the former, the specific organisms will be found in the discharge, while the latter presents various forms of bacteria, staphylococci, streptococci, diplococci, etc.

Pneumonia frequently causes middle ear infection, although more frequently O.M.C.A.† This is important, especially in infants and children where physical signs of pulmonary lesions are more difficult to interpret than in adults. Casual inspection of the drum may reveal redness, which may be considered responsible for the temperature, while it may be merely incidental congestion of tympanum along with that of the other body organs, due to the high temperature and toxemia. Careful examination will reveal the difference between

(1) O.M.C.A. where the drum may be red and angry but not bulging and the landmarks are not obliterated whereas in

(2) O.M.P.A. besides being red, the membrane bulges and the landmarks are obliterated.

We must learn to distinguish between these two, because incision is imperative in the purulent otitis, to avoid, if possible, extension into the mastoid, while incision of the catarrhal otitis, especially in pneumonia, tends to produce a virulent infection of the middle ear. And if we incise the drum, before nature has established its protective inflammatory wall it may enhance the spread of infection toward the mastoid and endocranium.

In influenza, especially epidemic, O.M.P.A. may develop very rapidly, assuming serious proportions from the outset, usually due to hemolytic streptococci which lodge in the blood vessels of the middle ear and mastoid, the infection taking place through the blood stream. There usually is no warning of the seriousness due to the absence of the cardinal symptoms, namely (a) profuse discharge (b) narrowing of canal and (c) sagging of posterior wall; but clinically, the patient shows a septic temperature diminishing hemoglobin and red cells and there is a thin, serosanguineous discharge. In this type of infection an early mastoidectomy will usually save a bacteremia if not a life.

The occurrence of O.M.P.A. in chronic diseases, such as diabetes, tuberculosis and syphilis, is worthy of special mention, as this type of infection may be more virulent due to the patient's lowered resistance as compared to an otherwise healthy individual. This is especially so in diabetes, where we often get a numbing of pain and in fact, it frequently is abolished. So we may unwittingly delay operation here, only to find a very extensive destruction of bone out of all proportion to the symptoms. So where O.M.P.A. occurs concurrent with diabetes, it is important to keep a close and constant observation of it, along with frequent x-rays, etc.

We rarely have acute infections of the middle ear in tuberculosis. Tubercular otitis is usually secondary to a pulmonary infection and is chronic, presenting a series of small tubercles on the drum, which break down and coalesce, forming a large perforation. So in early stages, where we find multiple perforations, a tubercular process must be suspected. A syphilitic infection of the middle ear, in its tertiary stage simulates tuberculosis; small gummata may break down and coalesce forming large perforations. A Wassermann test will help in the diagnosis.

*Significance of certain organisms in O.M.P.A.*

Cultures should be taken of the aural discharge in all acute middle ear infections; this is of value in prognosis. The more important organisms found are the streptococcus mucosus capsulatus or (pneumococcus type iii), the Friedländer bacillus, the streptococcus hemolyticus, and the pneumococcus.

The streptococcus hemolyticus, occurring usually with influenzal otitis, promotes an increase of bacteremia, because of its selectivity for

*Acute Purulent Otitis Media.
†Acute Catarrhal Otitis Media.

hemoglobin, and is frequently found in mastoid infections.

The pneumococcus type iii and the Friedländer bacillus produce a lesion like that occurring in diabetes, with rarely pain, but a danger of intracranial complications. The pneumococcus infection also is dangerous for intracranial complications, but causes more pain.

### DIAGNOSTIC POINTS

It is often difficult to determine just when the infection has passed the stage of O.M.P.A. and become mastoiditis, requiring surgery. But if we just sketch the middle ear and mastoid process, in our mind's eye the tympanic cavity is connected with the mastoid through the antrum and that we have a direct pathway from the ear to the mastoid process. The latter is composed of a number of bony chambers containing air in communication with the middle ear and both are lined with mucous membrane containing small blood vessels.

We have also the same methods of infection here as elsewhere, namely by (a) contiguity of tissue, from middle ear, through the antrum into the mastoid, or (b) there may be multiple infected emboli lodging in the small vessels of the mucosa of the ear and mastoid.

In a contiguously infected mastoid, we have an acute coalescent mastoiditis, which is the usual type, while the other forms the acute hemorrhagic mastoiditis, less often recognized.

In the former, we have a gradual destruction of cells due to the pressure of the pent-up pus with a resulting pressure necrosis of the cell walls, their collapse and several cells uniting to form one large cavity, containing pus and débris. The bone over the sinus or dura may be involved with a potential phlebitis, sinus thrombosis, meningitis or brain abscess.

In hemorrhagic mastoiditis, we have no breaking down of the cells and very little pus pressure; here we are dealing rather with a bloodstream infection, localized in the ear and mastoid vessels with danger of bacteremia.

X-ray is of value not only as a help in diagnosis, but because it outlines the extent of the mastoid cavity and in some cases is an important adjunct to help us determine when to operate. Due to the edema in the mastoid, in acute middle ear infections, the x-ray usually shows a diffuse cloudiness of the mastoid region which should not be interpreted as an indication for surgery unless separate cellular structures and bony walls separating them are not intact.

A positive x-ray usually concurs with the diagnosis in coalescent mastoiditis, but if the patient has had repeated attacks of otitic infections in the past, the x-ray may show an apparent lesion out of proportion to the existing lesion; a series of plates may be necessary here.

In the hemorrhagic type of mastoiditis, the x-ray is not so valuable, as very little, if any destruction takes place until the later stages.

### LABORATORY AIDS TO DIAGNOSIS

A blood-count should be complete. A high white count with a high polynuclear count shows a good resistance, whereas a low polynuclear count with a high white count shows a low resistance. A low hemoglobin and red cell count show the patient is not properly coping with the toxemia. A blood-culture is of value where a septic picture presents along with O.M.P.A. If negative, it is not conclusive, but if positive indicates a bacteremia with unfavorable prognosis. This is of especial importance in infants with a primary bulb thrombosis. This is not to be confused with sinus thrombosis. The family physician sees the former first usually, while the otologist is more apt to see the latter first.

Primary bulb thrombosis occurs without mastoid involvement, due to the close proximity of the bulb with the floor of the middle ear. There are three oustanding symptoms, namely:

(a) The presence of O.M.P.A.
(b) A septic clinical course.
(c) A positive blood culture (usually streptococcus hemolyticus) in the absence of any mastoiditis.

There are four principal clinical signs of help in diagnosing a mastoiditis, particularly of the coalescent type. Each of them is dependent on the other and one or more may be absent.

(a) Duration of the disease; usually after two weeks of profuse discharge with no signs of abatement, one should be suspicious, although we have seen some cases that clear up without surgery long after two weeks' otorrhea.

(b) Examination with the otoscope, will usually show a drooping of the posterosuperior canal wall and a narrowing of the lumen of the canal with edema of the surrounding parts.

(c) The amount of discharge is probably the most important sign. The middle ear is a small cavity, and persistent, profuse discharge indicates extension into the mastoid process. A pulsation of the discharge is also suspicious.

(d) Clinical symptoms, such as toxemia, loss of weight and appetite, listlessness, etc., may direct our attention to the mastoid. The temperature may or may not be raised. If the infection is well walled off, there may not be much rise in temperature. Also, in adults, the temperature is not far from normal, except in complications.

### TREATMENT

Paracentesis is the most common of all otological procedures. There is only one indication for paracentesis, and that is the presence of pus in the middle ear. It should not be exploratory, as one can usually diagnose the presence of pus in the middle ear by means of a careful oto-

scopic examination, showing a bulging of the drum membrane and obliteration of the landmarks. Infection can be easily carried into a sterile middle ear by opening the tympanic membrane.

Once the indication is established, the incision should be placed in the best location for drainage, usually the posteroinferior portion of the drum, making the incision from below up, in order to avoid injury to the inner wall of the ear, which might bring about a labyrinthitis.

The value of paracentesis is in affording drainage only. It relieves the pressure from pus in the middle ear, preventing its drainage back into the mastoid, to some extent; but the other factors concerned in the production of mastoiditis are not affected by paracentesis.

Therefore, after adequate myringotomy, if the symptoms of impending mastoiditis persist, it is because the patient cannot set up the necessary barriers against it, because the infection is too virulent, or because the congestion around the antrum prevents drainage from that area. A repetition of paracentesis will not help, usually, but on the other hand, may cause more scar tissue and eventually lead to a loss of hearing.

After paracentesis has been performed, treatment varies with the individual, and I believe the best treatment to be the one which gives the best results in one's hands. Some advocate nothing more and allow nature to complete the healing. Some use dry gauze wicks and others, irrigations and drops. All methods have proven their merit in certain cases.

There are certain contraindications of importance, however. Phenol is decidedly injurious; it causes an intense congestion of the drum, which prevents the proper judging of the progress of the disease, and the drum will continue to be red, long after the suppuration has ceased. It is also somewhat destructive to the delicate tissue of the drum.

Glycerine with phenol makes a sticky glue, clogging the canal and preventing proper drainage.

While the dyes are not harmful in acute infections, they may discolor the drum membrane and walls, masking their real appearance.

Alcohol is a good antiseptic and will not injure the tissues nor discolor them. If diluted with boric acid solution, about half and half, it is not painful.

Irrigations have proven beneficial in my hands, and assertions that they might force back some pus into the mastoid are groundless. Experiments have shown that fluid will not enter the middle ear through a perforation, when pus is present there under pressure. Irrigations simply wash away the discharge from the canal.

At any rate the eventual cure is rarely dependent on the method of treatment, but rather on the patient's resistance and his ability to cope with the infection, once proper drainage has been established. These factors are best enhanced by absolute rest in bed, attention to elimination, copious intake of fluids to combat the toxemia, opiates for relief of pain, etc. Suction is dangerous and harmful and is to be discouraged.

A word about the removal of tonsils and adenoids. There is no question about the value of this procedure in helping to prevent recurrent attacks of acute otitis, especially in children. However, one should be reluctant to remove them in the presence of an acute middle ear infection, and only when certain there is no mastoid involvement. Otherwise, wait until the subsidence of the acute symptoms, or great harm may be done.

### Discussion

Dr. A. L. MacMillan, Concord: Dr. Kittredge was to open the discussion of this paper but he is ill. For so many years we have looked forward to seeing and hearing Dr. Kittredge at our meetings that I am sure we are all very sorry to hear of his illness.

I should like to put in a plea for the baby and the small child. When we are called to see a baby or a small child who is having temperature and is a little fussy, something is wrong with him. I have always gone on the assumption that a baby cries because it is his only defense if anything is wrong with him. If a baby is perfectly all right he does not usually cry but when he cries he has pain somewhere, as a rule. It may be in his ear or in his stomach; but if the baby is fussy, if he cries and has a temperature, it is our job to find out why he cries, why he has temperature, why he fusses.

I think all of us long years ago learned that, given evidence of discomfort, with negative physical findings in the general examination there were two things we should be constantly on our guard against, namely, acute otitis media and pyelitis. Those are the two obscure but important lesions. Having ruled out pyelitis, I think we should be more constantly on our guard with these little fellows, the babies and the small children who are definitely uncomfortable. I do not know that you all make a careful examination of the ear to see whether it should be opened or not but I hope you do. I think the younger men should. And, if you do not, recognize that possibility and call for help.

Now a word, as the doctor has said, about aural incisions. An aural incision will save them a good many times from a possible mastoid, and a possible mastoiditis will save them from intracranial complications and sinus thrombosis, and if we can cure an acute case we can accomplish a good deal. It is only logical that everything that is chronic must at some time or other have been acute, and if we can cure our acute cases we can stop our chronic cases. If we can cure

these conditions early and save the youngsters from mastoids and other complications, the next generation will have better hearing.

A word in closing about x-ray. I cannot let this opportunity go by without expressing my appreciation to the roentgenologists for the hearty coöperation which they so gladly give us in making the proper diagnosis of these cases many times. I take my hat off to the x-ray men for their help.

## THE PRESENT AND FUTURE STATUS OF THE GENERAL PRACTITIONER IN NEW HAMPSHIRE*

BY ARTHUR W. BURNHAM, M.D., LEBANON†

DURING the past ten or fifteen years much has been written and said about the country doctor. The problem of rural medicine has been discussed from different angles at medical meetings, in medical journals, in newspapers and magazines. It has furnished a topic for hot debate in town meetings, women's clubs, and hot stove leagues at crossroads general stores. The passing of the old-fashioned country doctor has been lamented from press and pulpit alike, and has furnished abundant material, if I may be permitted to use the modern vernacular, for professional writers of "sob stories".

It is perhaps superfluous to remind the members of this Society of the patent fact that the whole subject is badly in need of "debunking". Is it not possible that we ought to exert our influence, as much as we are able, to bring before the public a clearer and more rational conception of the subject? It is noticeable that the man in the field, the country practitioner himself, has contributed but very little to the vast amount of literature on this pertinent subject. The reason for this, it may be safely assumed, is that he is too busy doing the day's work.

The purpose of this paper is not to offer a panacea for all the troubles of rural medicine, but rather to set forth from the viewpoint of one who has been a country practitioner for ten years, an analysis of some of the phases of the whole problem in the hope that it may prove interesting enough to provoke discussion, stimulate thinking, and leave the path open for the future building of a more nearly ideal system of the practice of medicine in rural New Hampshire.

With the foregoing introduction in mind, it is our intention to discuss the following phases of the status of the country practitioner: educational, social, civic, professional, and economic.

Medical education has, within the memory of most of us, undergone radical changes. It is, therefore, evident that our primary educational equipment varies in more or less inverse proportion to the number of years that have elapsed since our graduation from medical school. Bear in mind, also, that during this same time, general education of the laity who form our clientele has also undergone a radical change. Fifty years ago, in the average small community, the doctor was one of the very few residents who could boast of even a high school education or its equivalent. What is the situation today? The following statement contained in a recent bulletin of the New Hampshire State Board of Education illustrates the trend of the times: "The situation is shown by our advance in high school enrollment, since in ten years there has been an increase of 33%. In ten years, New Hampshire has gained little in population while more than 4,000 of our young people now in high school are from families not convinced in 1919 that secondary education was necessary."

When we consider this phase of the educational question it is readily seen that the doctor often comes in contact with patients who are better trained in the fundamental sciences than he is himself. This situation alone is enough to veto any suggestion of shortening the medical curriculum or of creating a special substandard course for the training of country doctors.

It is our belief, however, that some changes might be made in the methods of teaching as they exist, which might tend toward better preparation of young men for general practice. There is always a tendency among teachers who are necessarily specialists in their particular subject, to try to drive home their special knowledge without particular regard for anything else. An example of the most successful type of teacher is the one who when asked what subjects he taught, instead of enumerating mathematics, chemistry, etc., answered: "I teach boys and girls." In other words we need more of the human element, the personal touch of understanding, the art as well as the science of the practice of medicine.

About fifteen years ago practically all the medical schools situated in distinctly rural sections of this country were forced out of existence by the cry of: "More full time teachers, more and bigger hospitals, better facilities for clinical teaching, and more clinical material." After the lapse of fifteen or twenty years, the effects of this sweeping change are being felt in rural New Hampshire, and some of the very powers who initiated this movement are now beginning to wonder if the broom did not sweep too clean and too vigorously. It is our contention that in these small schools situated in rural sections, the most favorable opportunity existed for the

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†Burnham—For record and address of author see "This Week's Issue", page 697.

teaching of the homely art of medicine as well as the science of medicine in its fundamental and practical phases which, when thoroughly mastered, are the greatest assets of the successful general practitioner. The neophyte in medicine ought to be trained how to use a fountain syringe, hypodermic needle and stethoscope, and most of all how to use his hands, eyes, and common sense before he is taught the intricacies of the electrocardiograph or the technique of a delicate brain operation.

The movement now on foot to establish a New England Medical Center in Boston is deserving of, and no doubt will command the careful consideration and study of the best minds in our profession in New England. It has been stated that for several years the Tufts College Medical School has made its definite goal the training of New England family doctors, and that an unique feature of the New England Medical Center will be its program of informal instruction for practicing doctors. Will the plan be successful in accomplishing its avowed purpose? Time alone can answer this question. It is very likely that the success or failure of the enterprise will depend to a large extent upon the response of the general practitioner. Will he or will he not avail himself of the opportunity offered? At any rate, here is at last a concrete plan offered for our consideration. Looking into the future, the plan opens up all sort of possibilities for innovations in methods of medical education. Possibly some sort of exchange system might be worked out whereby the general practitioner could go to the medical center for a period of study while the center supplied him with a recent graduate as *locum tenens*. Perhaps some wise philanthropist might endow a chair for the teaching of what we have designated as the human element, the personal touch, the homely art of the practice of medicine. Is it presuming too much to suggest that such a chair should be occupied by a *bona fide* country practitioner ripened by years of experience and steeped in the intimate knowledge of the personal affairs of thousands of his fellowmen and women?

Let us now consider some of the various ways in which the country practitioner of today is affected by the recent radical changes in medical education, by the vast increase of knowledge in medical and allied sciences through new discoveries, and by the tremendous increase in the general education of the laity and more particularly their increased knowledge, accurate and inaccurate, of medical subjects. We have already stated that the medical education of the average doctor varies in more or less inverse ratio to the number of years that he has been in practice. We maintain that the original and fundamental preparation of the average country doctor was good. The problem then resolves itself into this question: "How shall we keep our educational and professional standing good in the face of the rapid advances of the era in which we are living?"

The laity, because of increased medical knowledge through the medium of the newspaper, the magazine, or the public health worker, is constantly demanding better diagnostic methods, hospital and laboratory aids, and more complicated methods of treatment from their physicians. Now it is easy enough for the fluent metropolitan medical writer or editor, surrounded by a dozen or more hospitals within a quarter of a mile of each other, accustomed as he is to urban standards of living and urban fee schedules, to tell us how to keep up with the advance of modern medicine. We have all been frequently amused by some of these articles. We all know that economic and social conditions enter into the situation and make impossible many of these suggestions and remedies for keeping out of the rut, getting rusty, narrow minded, and too old-fashioned.

But we cannot reject every suggestion that is offered as impractical. It is our job individually and collectively to select and apply methods best suited to our individual needs, and best calculated to fit in with social and economic conditions existing in the communities where we happen to practice. We shall enumerate and discuss the following topics which we believe to be some of the most important factors in the success or failure of the general practitioner to keep in step with the advance of modern medicine.

1. Hospital connections.
2. Contact and coöperation with other members of the profession.
3. Postgraduate study.
4. Civic and social relations.

The hospital idea continues to grow more popular, both from the point of view of the profession and that of the laity. Twenty or thirty years ago the average layman in any rural community looked upon the hospital as a place of last resort, and consented to entering its door as a patient only when death seemed imminent, or perhaps was carried there when unconscious and therefore unable to protest. Today, however, Mr. Average Rural Citizen is much more apt to regard the hospital as the court of first rather than last resort in the event of sickness, and is even coming to consider a sojourn there as a wise prophylactic measure. From the professional side, what has happened? Medical schools are requiring hospital internship before granting a degree. State Boards of Registration are demanding the same qualification before licensing the recent graduate. The young doctor in his turn, when considering a location, asks first of all: what are the hospital facilities and can he obtain a place on a hospital staff?

Consequently, the general public as well as the profession has come to recognize the hospital

as a necessary institution for carrying on in the practice of modern medicine, and here in New Hampshire we have witnessed the establishing of more and more hospitals in scattered larger communities of rural sections.

It is a sign that augurs well for the future of the general practitioner in New Hampshire, for herein lies his best chance of salvation and success, in both the economic and professional interpretation of these terms. We are beginning to see that the highly trained young physician of today can neither be coaxed, cajoled, preached or threatened into locating in a community which does not offer him an opportunity to continue hospital practice. We believe, therefore, that if the public is to clamor for a good old-fashioned or a good new-fashioned family doctor who can bring the new baby into the world, circumcise him if necessary, remove his tonsils and adenoids, set his broken collar bone or leg without the aid, advice and consent of a half dozen specialists—then some means must be provided for supplying still more small hospitals located in rural sections, accessible and open to the general practitioners in the surrounding area.

There are, however, signs which lead us to believe that this movement for more small hospitals in rural sections may be checked by the same agencies which caused the disappearance of the rural medical school. We have no intention of picking a quarrel with the Council on Medical Education and Hospitals but we wish to make the point that the standards of judging hospitals should be somewhat flexible and should take into consideration social, economic and geographic factors.

For obvious reasons, the closed staff system obtains in most of the larger hospitals and in those connected with teaching centers. Quite naturally this system results in the building up of a group of specialists and rightly so. The public needs the services of such institutions and their staffs. The general practitioner on the outside should be able to select his cases which most need this type of service, and if he does so, not only is the patient benefited, but the doctor may learn something which makes him, by that much, a better general practitioner. On the other hand, here is a situation which often confronts the conscientious, well-trained practitioner who has no hospital connections. He has under his care, for example, a perfectly normal pregnant woman who wishes to enter a hospital for delivery. Shall he advise her against the hospital and persuade her to make arrangements for delivery at home? His pocketbook says "yes"; his conscience says "no". Being conscientious, as we have previously assumed, the pocketbook loses the argument. Let us consider another common occurrence. The family doctor is called to see a case of "indigestion" with acute abdominal pain and vomiting. He makes a correct diagnosis of acute appendicitis or of an acute surgical condition, sends the patient to a surgeon for immediate operation, perhaps after much time is lost in persuasion and argument with the patient or the family. The surgeon operates successfully and collects a good fee; the family doctor collects two dollars and the patient considers this a high price to pay for having "Doc" come in and look at him and tell him to go to the hospital. This latter illustration was taken from a paper read and discussed before this Society two years ago when it was made the basis for the argument that the general practitioner is entitled to a good substantial fee for his services in such a case. But what would be the result if he charged such a fee? We believe that he would very likely meet an indignant protest.

Lest any misunderstandings arise, it should be clearly understood that the foregoing examples are not cited with the slightest intention of reflecting any criticism upon the surgeon or specialist. The general practitioner who complains of *his* hard lot and places the blame for it on the specialist, admits that he is in the rut, has become narrow-minded, or has lost sight of the fact that service to his fellow-men is the primary object of his calling.

This brings us quite naturally to our second topic: Contact and coöperation with other members of the profession. Perhaps one of the worst faults of the average rural practitioner may fairly be said to be his tendency to "go it alone," to hold aloof from social and professional contact with other doctors. To be sure, plenty of reasons or excuses for such an attitude may be brought forward; he is busy, he is isolated, he cannot afford to lose the time. But modern methods of transportation and communication are doing much to eliminate some of these reasons or excuses. We can all do much more ourselves if we get to know each other better. Therefore, we venture to suggest some concrete means of bringing about better contact and coöperation: more frequent consultations, perfect attendance at all society meetings, more social gatherings, freer discussion of our professional and economic problems. In short, get to know the other fellow better, whether he be a neighboring practitioner or a specialist in a distant town; if you do, you will like him better, understand his problems better and go home better satisfied with your own lot.

How shall we attack the problem of post-graduate study? We must admit that such study is necessary if the general practitioner is to maintain a creditable professional status. To be sure, there are open to him the avenues of the urban medical centers and clinics, plenty of books and journals, not to mention the detail men and the ever increasing flood of material descending upon us through the mail to clutter our desks, shelves, and wastebaskets. For many of us the economic factor operates as a sort of bar sinister to the avenue of the distant medical

center or clinic. We have already mentioned the possibilities of the future in the contemplated New England Medical Center. Let us take time here to emphasize what we have previously discussed and what we believe to be of more practical benefit to the average general practitioner—namely, the founding of more and more small local hospitals and clinical centers served by men who are able to spend some time at the larger fountains of medical knowledge, and who by virtue of their personal contact, are best able to sift out and pass along the most practical and proven facts in the advancement of medical science.

The pressure of time prevents the busy general practitioner from enjoying the full benefit that might otherwise be derived from books and journals. Sometimes we may find time only to read "Tonics and Sedatives" in the *Journal of the A. M. A.* These are often worth while and may even teach us something to aid in what we have called the human side of our profession, or the homely art of medicine. We have often heard the complaint that most of the leading articles in this *Journal* are ultra-scientific and too far over the head of the man in general practice. This is probably true, but here again we should stop to consider the other fellow's problem and reflect that the *Journal* is published for the benefit and edification of the entire profession. If we turn to the column devoted to queries and minor notes, however, we can find here abundant material for study—material and facts that have been weighed and sifted by experts and put into condensed form for the postgraduate student who chooses to carry on his education through the medium of reading.

What is to be said of the Chautauqua correspondence courses in therapeutics now offered so freely by the pharmaceutical houses? Surely there is no excuse, except the limitations of one's memory, for any of us saying, when some new therapeutic agent is mentioned, that we have never heard of it. We admit that there is much of real value offered us, but we contend that much time, knowledge, and the power of discrimination to the nth degree is needed to separate the sheep from the goats.

In a recent article in the *Journal of the A. M. A.*, J. H. Stokes says: "If prayers could do it, the wrath from above would certainly descend on the head of the concern which — — — proceeds to send out samples with folders retailing the appreciation of Dr. Sap of Little Sticks, who has used it on six hillbillies with astounding results."

We shall now consider in conclusion the status of the general practitioner in relation to civic and social conditions. Especially in the smaller communities he does, should, and will in the future continue to take an active part in the civic and social life of his community. Upon his ability and willingness to do so, depends to a large extent his success, economically and professionally. Herein lies the secret of the success and popularity of the family doctor idea. He knows his clientele personally; he is one of them; he shares their economic, social, and civic problems, and is able to adapt himself to both the highest and lowest social and educational planes of the families whom he serves. They may desert him for the services of the higher trained specialist, or often for those of the blatant quack, but in time of stress they will return, and if he is wise and well-trained in the art as well as the science of his profession, such defections only spur him on to better work. He will emerge in the future a better trained, better paid, and better satisfied man than at present.

## Discussion

Dr. Emery Moore Fitch, Claremont: This subject which Dr. Burnham has so ably brought to our attention is and should be of vital importance to all practitioners in New Hampshire because this is a state made up largely of rural communities, and our medical men consist principally of general practitioners. Of the 580 or more physicians licensed to practice in New Hampshire only fifty claim to be strictly specialists, one hundred claim to give special attention to some one particular branch of medicine, along with their general practice, and the remainder go on record as willing to try their best at getting the patient well or at least being the initial factor in starting the study which, with the help of others who are working along special lines and through the aid of laboratories, will finally lead to proper diagnosis and treatment.

There is surely no reasonable argument for the establishment of certain medical schools which would provide a special substandard course for training men to do country practice. If there is anybody who especially needs a good fundamental training it is the fellow who is obliged, by his work as a general practitioner, to go into the homes of sick people and get them started early in the right direction whether it be to treat them for a light sickness in their own home or to be able to see that they are afflicted with a grave condition which needs modern scientific methods of diagnosis and the attention of one or more consultants who are devoting their entire time and thought to special subjects.

What Dr. Burnham says of the harm in the tendency of the general practitioner to "go it alone" is all too true but it is no more harmful for the rural doctor than for the urban. No practitioner general or specialist can afford to work entirely by himself. He must get in touch with others in his own town and above all, if he is to keep approximately abreast of the progress of modern medicine, he must avail himself of the privilege of attending medical meetings and he must visit the large clinics and observe the new methods which first gain use in the large centers.

Regarding the hospital condition in New

Hampshire: There are now sixteen institutions which are approved by standardization of the American College of Surgeons and these hospitals are scattered throughout the ten counties, each county having at least one. By this process of standardization each of these hospitals has a well-equipped laboratory and x-ray and in so far as is possible, most of the modern methods of arriving at a true diagnosis. Furthermore they have agreed, whether their operation be closed or open, by the plan of "Health Inventorium" to aid any practitioner (who is a member in good standing of the American Medical Association and of his State and County Medical Society) by extending to him the use of an examining room, consultants if desired, laboratory tests, etc., as will insure a comprehensive audit of his patient's condition. This affords the general practitioner greater facilities for service to his patient and gives the layman assurance of scientific service by his own physician.

Dr. Clarence E. Dunbar, Manchester: There is just one little issue I should like to bring up in the time allowed—I am afraid I will not have time to develop it fully, but I should like to discuss the matter of the economic side of practice and show one method wherein I think the general practitioner might well improve himself.

It seems to me that the practice of medicine is divided into two departments. There is, first, the professional, and Dr. Burnham has shown us in what way we might improve ourselves professionally; and, on the other hand, there is the economic side, the financial side, in which we are apt to be very weak. These two departments, it seems to me, are interdependent, and no one man can be a professional success unless he advances financially, and on the other hand, he cannot advance financially unless he has professional ability.

We all know the cry about the high cost of medical care, and you have all heard of the Committee of over forty which has taken that up, and I hope you will all follow their work along very carefully.

In Manchester we have tried to build up some method to get around our financial difficulties. There is competition with the quacks and cults of various kinds, and we have tried to organize what we call the Physicians' Service Bureau. In the Middle West, especially, these Service Bureaus or Credit Bureaus have been organized in many places and have been found to be of great advantage to the profession. The idea is to try to eliminate the professional rounder, the man who goes from one doctor to another, never intending to pay any person at all, who, as soon as he runs up a bill with one doctor, goes to someone else and immediately tells everybody that the first doctor is a quack. There are a good many of these people, and we find them in the city more than in the country; but they are everywhere, and the idea of the Service Bureau is to try to separate, as has been said, the sheep from the goats and try to classify certain persons as worthy poor and deserving of charity, in addition to the listing of the unworthy of various types. Of course, every doctor is perfectly willing to attend any worthy charity case, when he recognizes it as such.

The other function of the Service Bureau is the matter of collecting old bills. That is relatively unimportant.

It seems to me that if these Service Bureaus could be organized through the state under the control of a state manager, a full-time paid official, who could look after the credit side, make up the credit lists, and also take care of insurance and legal matters and our relations with nurses and dentists, it would be a great thing for the profession as a whole.

Dr. Edward H. Egbert, Wolfeboro: Of recent years every annual convention of many, perhaps most, of the state medical societies has included some medico-economic problem in the program. The question of rural practice has been brought before this Society repeatedly. All this is significant of the fact that something is wrong and that as yet the etiology, diagnosis and treatment are not fully worked out.

I wish to congratulate Dr. Burnham on his wisdom in his handling of his subject. With admirable restraint he "debunks" a lot of the hysteria and sentimentalism, at the same time placing a gentle finger on the dysfunctioning organ in our medical body which is the cause for these manifestations. He outlines in a general way the treatment indicated, emphasizing particularly one of the most urgently needed remedies, namely, more rural hospitals.

Modern practice of medicine, surgery and obstetrics demands hospital facilities and rightfully so. The value of an accredited hospital to a community cannot be over-estimated. It is not an expense but an economy, not a liability but an asset, not a luxury but a life saving, sickness shortening necessity. Its educational value alone, to both practitioners and public is worth the cost. I venture to estimate that enough money is spent in every community for useless, often dangerous, self-medication to maintain a real hospital. An educational campaign to promote the establishment of a hospital should be undertaken in every community where the need for one exists.

Our distinguished guest, Dr. Malcolm L. Harris, President of the American Medical Association, has repeatedly called our attention to the fact that it is the responsibility of our profession "to serve all of the people all of the time". If we fail to live up to our responsibility in this regard we may confidently expect to have our noses held while some concoction of State Medicine is forced down our unwilling esophagi. We would then be bound and fettered by no end of ever changing rules and regulations, scolded,

threatened and fined for transgressions regarding everlasting reports; we would indeed be Volsteaded, Harrison-acted, Shepard-Townered enough to go loco by perfectly well intentioned Chiropractor-adjusted, Osteopathic-lobbied legislators. All concerned would suffer, no one would benefit, except perhaps the straight-jacket manufacturers.

The Council on Medical Education and Hospitals is deserving of the highest praise for the work it has accomplished in raising educational standards. Sub-standard schools have either closed down or have met the requirements. Nondescript schools and outright diploma mills have been forced out of the picture for all time. However is it not time to sound the "recall," and by that I do not mean the "retreat?" No retreat from the present educational standards in general as regards minimum requirements, but modification and adaptation of teaching to the needs of the great majority of the people in the various population groups. We need a few great medical centers, with their heavy endowments, in order to carry on with scientific medical research and undergraduate and postgraduate instruction for those intending to devote themselves to lives of scholarly attainment. Such schools are needed also by those on the firing line who can drop back for periods of postgraduate rehabilitation.

I raise the question, rather than state the opinion: Are we not over-sold on this type of school? Has not *comparatively* too much money been deflected to endow too many of the same type of school?

The actual practice of medicine is an art, with a background of scientific training and knowledge. When an artist is hampered, nagged, restricted, deprived of individualism, of initiative, and of enthusiasm, he ceases to produce, to create, and to obtain results.

What I am getting at is this:—We are overstandardized in medical teaching; we suffer an over-production of an identical type of doctors, because they are taught in pretty much the same type of school.

Men of the soundest business sense, who have made millions because of their expert knowledge of conditions, coupled with sound judgment, have amassed other millions in correctly solving problems of demand and supply; production and over-production and in marketing products. They have supplied the various demands of various and varying types of customers; established branches, service stations, and chain stores; have sold hundreds of millions of dollars worth of goods by mail; have sold hundreds of millions of dollars worth of goods on deferred-payment plan at a profit; and yet, many of these same men have lost their sense of proportion, or have been ill-advised, when it comes to their medical philanthropies. They have poured millions of dollars into medical centers—all of which are as near alike as the 1930 model of standard sedans from the same factory. (You have your choice of colors.)

Henry Ford, whose scientific, practical engineering knowledge, business sense, good judgment and steadfastness of purpose have made him probably the richest man in history, is a good illustration of what I mean. On the same fundamental chassis—a triumph of scientific engineering skill—he provides various bodies, for various kinds of service: a variety of bodies on chassis geared for speed; a variety of truck bodies, with chassis geared for heavy hauling. In addition to this, he provides tractors for general farm work, Lincolns, with custom-built bodies, for the elite, and aeroplanes, for commercial or passenger use.

I appeal for more of this same sense, in medical training, training which will meet the needs of our varied and diversified population. I appeal for more of this same judgment in philanthropic endowments for medical education.

When college tuition was around a hundred dollars a year, and good board and room could be had for five dollars a week, there was no dearth of doctors located in our rural centers of population. Why? Because a medical education was within the financial means of country-bred boys. Having graduated from medical school and because of withdrawal—in most cases — of further financial assistance making it necessary to begin making a living, most of these young men settled in communities where doctors were most needed.

The present cost of medical education, averages about the same for each of six years, as it did most of us for our whole four-year course; the only exceptions to this are in certain state universities.

The only answer to the rural-practice problem is to bring the cost of medical schooling within the financial reach of country bred boys, within their own home state.

A bigger "Center", with enlarged clinical facilities, an enlarged student body, and a faculty enlarged by the addition of more teachers, inexperienced in general country practice, is not going to solve the problem. A few country boys may be able to go; but if they do, they won't come back.

In conclusion, I plead for more teaching of the art of medical practice for those destined to treat the vast majority of folks who are just plain sick, or injured. I plead for closer communion between faculty and student, which means a reasonable proportion of smaller schools; I plead for more of the old preceptorship idea of character building; of development of judgment, power of decision, sense of personal responsibility, and resourcefulness; for undergraduate and postgraduate instruction in rural clinics, as well as in hospital wards; for actual field work under actual conditions; teaching of clinical subjects by men of ripe clinical experience in the field. I appeal for the development

of the knack of studying patients, and sizing up situations, in place of over-burdening undergraduates with mere glimpses of hundreds of cases. I appeal for a weeding-out of students found to be commercially minded, rather than professionally minded,—as "an anchor to windward" against high fee specializing.

New Hampshire is essentially a rural state. Sixty-eight per cent. of our private practitioners are fifty years of age or older. Our average age is fifty-five; and in towns of less than 2000 population, eighty-five per cent. of the practitioners have passed the half-century mark.

## MISCELLANY

### A TOY SHOWER FOR NASHUA, N. H.

The Boston Junior Red Cross has sent funds for the purchase of new playground equipment for Nashua, N. H., which was recently swept by a great fire. Many of the children lost all their own playthings, while their parents suffered severe financial losses, and an appeal has gone out to the Junior Red Cross Chapters of New England for contributions to a "toy shower" for the Nashua children.—*Children's Bureau.*

### NEW MEMBERS

Dr. Albert C. Johnston, Gorham.
Dr. Mertrude Bell Dennis, Colebrook.

### PREVENTING DEAFNESS OF CHILDREN

Because of the fact that it seems to be of nation-wide opinion that too many children are having to be educated at special schools for the deaf at an extremely high cost, it is felt in New Hampshire that some steps should be taken whereby the hearing could be preserved, and fewer children become public charges so far as education is concerned.

At the present time we are educating approximately 35 totally deaf children, which seems a very high proportion for a State which possesses about 460,000 people. During the past few months, we have had a nurse study the situation, to determine the best possible steps to relieve this condition.

After careful thought and study, the Board of Public Welfare decided to purchase an audiometer, that will be available to the different school nurses throughout the State in testing the hearing of all children as they enter school. Where defects are found, it is hoped that the parents who are able to make corrections will do so. Those that are not will be aided by public funds.

In most States such problems are carried on by different localities and school boards, but New Hampshire feels that it is a matter of state-wide importance. The State Board of Education has expressed its desire to coöperate in every way, and their entire nursing personnel will be instructed to make examinations and report to this Board, so that all necessary corrections can be made by the best doctors obtainable.—*Jay H. Corliss, Secretary, Board of Public Welfare, State of New Hampshire.*

### CLOSING SCHOOLS FOR EPIDEMICS

#### Practice Often Helps to Spread Disease

While provision is made for examination or testing of each pupil enrolled in school during the first month of school, this calls attention to the more obvious defects, thereby affording an opportunity to help the pupil secure a normal basis with fellow pupils.

However, there is a probability of communicable disease being overlooked, especially in its incubation period, unless through foresight and the closest coöperation between the teachers, school officials, and local boards of health, such cases are promptly isolated.

There should be no hesitancy upon the part of a teacher in excluding from school any pupil apparently ill or suspected of being ill. The principle of prevention must be uppermost in mind and action if incidence of disease is kept down and epidemics averted. School boards will sustain this constructive procedure.

Occasionally where contagious disease develops, a strong inclination toward closing school arises. This obsolete practice should be discontinued, for experience has demonstrated that if schools are closed in the face of a threatened epidemic and pupils not kept isolated upon their respective premises, the disease is practically certain to spread.

Where an epidemic threatens, the local board of health coöperating with school authorities will secure the most effective control by arranging for daily examination of the pupils, with prompt exclusion and isolation of all suspected cases detected.—*Dr. P. H. Bartholomew, Director of Public Health, State of Nebraska.*

### PUBLICITY FOR THE DIRECTORY FOR MOTHERS' MILK

The Directory for Mothers' Milk, Inc., gave the second talk in its series of radio broadcasts on Thursday, September 25. It will be recalled that Dr. M. Luise Diez, the Director of the Department of Child Hygiene, gave the first talk a short time ago and this last was by Mr. William T. Frary, who has directed the publicity work for a great many medical organizations throughout Massachusetts and New Hampshire. Mr. Frary gave an account of the interesting new developments in regard to the growth of the Directory. This medical unit is a pioneer in its field and because of its success here other cities are following Boston's example and establishing centers. Just recently the Directory has moved into larger quarters at 221 Longwood Avenue. In this new location a large lecture room is available where the educational program of the work may be further developed. In Mr. Frary's talk he included a brief résumé of the growth of the Directory as well as how the nurses handle this precious product.

# VERMONT STATE MEDICAL SOCIETY

## A SURVEY OF THE MEDICAL FACILITIES IN VERMONT CONDUCTED BY THE COMMITTEE ON THE COSTS OF MEDICAL CARE

September 13, 1930.

Editor, *New England Journal of Medicine*,
Boston, Mass.

*Dear Sir:*

I know that the physicians of Vermont will be interested in the progress of the survey of the Medical Facilities of their state. So far the number of returns received from physicians has been somewhat disappointing. In order to have results that will be representative of the state, at least seventy-five per cent. (75%) returns must be received. I hope that every physician who has not yet replied will take the necessary time to fill out the required information and thus help to provide his profession with certain important economic facts.

The other parts of the survey are progressing. Schedules have been mailed to all the dentists, osteopaths, chiropractors and druggists in the state. The other schedules will be mailed shortly.

The detailed survey of Franklin County has been completed with the exception of the physicians. Each dentist, druggist, nurse, osteopath, and chiropractor was interviewed and provided confidential information as to the extent of his practice, his income and other facts. The St. Albans Hospital has also been studied. I hope to interview the physicians in the near future.

In Orange County each physician will be interviewed sometime in October. The Orange County Study will endeavor to give a detailed description of rural practice in the State of Vermont.

This brief account is made to the profession with the hope that the splendid coöperation this work has received from some physicians will be made most fruitful as a result of the coöperation of the others.

Yours sincerely,
ALLON PEEBLES,
*Supervisor of The Vermont Survey.*

## OBITUARY

Dr. Dean S. Drake, of White River Junction, died suddenly on August 30, 1930, at Monson, Mass., where he had gone to attend the funeral of a relative.

Dr. Drake was born August 29, 1872, in Woodsville, N. H. He was a graduate of Hartford High School in the first graduating class, following which he entered the railway mail service as a postal clerk. After a time he attended University of Vermont Medical College and also took a two years' course in New York City before locating in White River Junction, where he has ever since been one of its leading practitioners.

He was a veteran of the World War.

Besides his widow, he is survived by his father, Dr. Charles B. Drake, and several brothers and sisters.

## SKILFUL TREATMENT NEEDED IN GOITER

The United States Public Health Service states that if all goiters were benign in character, the treatment of the disease would be comparatively simple and satisfactory. Indeed, it might be possible to refer a patient to the corner grocery or drug store for some simple remedy which would, promptly and without fail, afford complete relief. In fact, many misguided individuals have adopted such a course without waiting for competent medical counsel. Alluring advertisements of proprietary goiter "cures" and unwise recommendations for the use of this or that home remedy find too many ready followers. Not only is valuable time lost in this way, but it is entirely probable that considerable damage is inflicted. Certain it is that mismanagement of goiter in its early stages often intensifies minor symptoms and makes later scientific treatment more difficult.

The differentiation of benign and poisonous goiters requires close observation by a physician familiar with the various manifestations. Certain tests, among which may be mentioned the basal metabolism, are of material assistance in reaching a conclusion as to the mode of treatment indicated. Maintenance of a cheerful disposition by the goiter patient and ready compliance with instructions issued by the medical attendant assist in insuring the success of treatment.

The success which had attended the use of minute quantities of iodine in preventing simple goiter has led many to conclude that this drug is likewise useful in curing all forms of thyroid disease. This erroneous belief has been responsible for much unnecessary suffering and permanent damage to the vital organs of goiter patients. As iodine is a potential poison it is capable, when improperly used, of converting a simple into a poisonous goiter, with all of the difficulties attending the latter condition. It follows, therefore, that iodine is not a sovereign remedy for all forms of goiter, especially when used by laymen. On the other hand, when judiciously prescribed by skilled physicians in appropriate instances, iodine may prove of distinct value in alleviating the symptoms of goiter.

For some goiters, operation is an accepted form of treatment. However, patients confronted by such an ordeal will be buoyed up by the knowledge that recovery is usually rapid, the results quite gratifying and the possibility of an unfavorable outcome rather slight. For other goiters, medical treatment is indicated. Whatever the mode of treatment, it is encouraging to know that the condition can usually be held in abeyance or entirely relieved by competent medical guidance. The progress which has been made in treating goiter successfully is easily one of the great achievements of scientific medicine.

# CASE RECORDS
*of the*
# MASSACHUSETTS GENERAL HOSPITAL

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.

## CASE 16401

## DEATH FROM COMPLICATION FOLLOWING SURGICAL TREATMENT OF LUNG ABSCESS

### MEDICAL AND SURGICAL DEPARTMENTS

#### PRESENTATION OF CASE

DR. GILES W. THOMAS*: A married Swedish carpenter fifty-nine years old came in complaining of cough and foul sputum of seven weeks' duration.

He said he had always had a peculiar feeling in the right side of the front chest. He was unable to elaborate on that point. Seven weeks before entry he had a "cold", very indefinite, lasting a few days. Later he began to cough and noticed a few blood streaks in the sputum. His physician sent him to be x-rayed. The x-ray showed lung abscess. At that time he began to raise foul sputum, a cup to a cup and a half a day. He gradually lost weight and strength, having no symptoms such as pain, fever or night sweats, merely progressive weakness and loss of weight. He was referred to the Outpatient Department and then came to the Emergency Ward. He had a foul breath and coughed up small amounts of sputum which did not seem particularly foul.

The physical examination was not remarkable except the chest, which showed dullness about the right nipple and right base behind, diminished breath sounds in this area, distant bronchial breathing, occasional sibilant râles, and a pleural friction rub in the right axilla. Tactile fremitus was normal. The liver was palpable. He showed general arteriosclerosis. I do not know what his temperature was in the Emergency Ward, but his daily temperature ranged from normal to 101°. Dr. Lord saw him the next morning. The signs had changed somewhat then. There was just a little dullness at the right nipple, no bronchial breathing, apparently no rub. His leukocyte count on entry was 13,000, hemoglobin 50 to 60 per cent. From January 16 to 24 in the medical wards he raised daily eight to sixteen or eighteen ounces of foul sputum without any apparent improvement. The sputum showed no spirochetes or tubercle bacilli.

The Thoracic Clinic advised operation.

*Resident on the East Medical Service.

#### ROENTGENOLOGICAL DISCUSSION

DR. GEORGE W. HOLMES: The film on the right shows dullness of a mottled character at the right base. It is not possible to see the diaphragm through it. There are no visible cavities. The film was taken with the patient lying on his back, and it probably would not show a cavity anyway. The note states that a cavity was demonstrated in the region of the interlobar pleura. There is not much of interest in these plates except evidence of a process at the right base probably involving the lung as well as the pleura. What looks like fluid may be thickening of the interlobar septum. We thought it was not fluid, but a thickened interlobar septum.

DR. JAMES H. MEANS: When you say fluid do you mean encapsulated?

DR. HOLMES: It would have to be largely encapsulated, but there could be some in the pleural space.

One other point of interest in these films taken after operation is this rather hazy line. The oblique view shows it very distinctly. It might easily be the diaphragm. In this case we have to consider the possibility that the whole thing is below the diaphragm. In the anteroposterior view you can see the same shadow. In this view with the patient lying on his side you can see a cavity extending downward for quite a distance. It may go down to the normal level of the diaphragm. We decided it was not the diaphragm but the edge of the pleura, although that is not a good explanation. I am somewhat at a loss to explain that shadow.

A PHYSICIAN: Was that film on the right taken after operation or drainage?

DR. HOLMES: There must be fluid in the pleural space outside the cavity.

#### FURTHER HISTORY

DR. THOMAS: The impression in the medical ward was lung abscess in the right middle or lower lobe with the possibility of either thickened pleura or collapse of the right middle or lower lobe.

DR. JAMES E. FISH*: The patient was transferred to the Surgical Service on January 29. Under local anesthesia a piece of the fifth rib was taken out in the left anterior axillary line. Immediately under the rib the pleura was found to be very much thickened, inflammatory and adherent. A needle was inserted directly into the abscess cavity. This was drained in the usual way in one stage without opening the pleural cavity. Wicks were inserted. On the tenth day the wicks were removed and a rubber tube substituted.

At no time did he do really well. He continued to run considerable temperature, though it appeared to quiet down on about the twelfth day. On the fifteenth day he began to have a

*Resident on the East Surgical Service.

more swinging temperature. The cough increased very markedly. He still had marked dullness and flatness at the right base. X-ray showed undrained fluid. We then began to feel that he had developed in addition an empyema. A piece of the ninth rib was resected posteriorly. We obtained about four pints of very foul thin fluid at operation. Of course the question rose as to whether this fluid existed before the first operation or whether on going into the abscess cavity through the pleura the process had been permitted to extend into the more general pleural cavity. One drainage tube and two Dakin's tubes were put into this cavity.

The patient did not show much improvement following the operation. On the seventh day Dakin's irrigations were started after preliminary testing with saline for bronchial fistula. The drainage from the original operation had decreased very markedly. On the tenth day the lungs were very much more resonant. The patient seemed considerably better for almost the first time.

On the twenty-seventh day following the first operation he appeared to be doing reasonably well so far as his chart and general condition were concerned. He then had a small hemorrhage from the second operative field, the empyema cavity. He was given morphia by the clock. That had not been a serious hemorrhage. About noon he had a very severe hemorrhage. The tubes were removed from the cavity. He was in very profound shock, comatose. Apparently he stopped bleeding. He was put in shock position and given intravenous glucose, and regained consciousness. The blood pressure was about 80. He was transfused and improved temporarily. He seemed quite over the shock, although he continued to run a low blood pressure and perspired freely. At about nine o'clock in the evening he suddenly became worse and died without further hemorrhage.

## Clinical Discussion

Dr. Wyman Whittemore: I can talk more on general principles. I saw this man in the Thoracic Clinic several times before he was operated on and several times after operation. As I remember, draining the pulmonary abscess did not do a great deal of good. He continued to cough up foul sputum. That unfortunately seems to happen quite often. The most interesting thing was the sudden tremendous hemorrhage from the pleural cavity. That does happen once in a great while following any empyema. I have seen eight or ten cases, every one of which has died, and I think you can make that prognosis when they have a hemorrhage. In this case there may have been some gangrene in the lung behind it, as the other cases I have seen had gangrene in the lung. There is little one can do to control it. I think it is wise to take out the drainage tubes, because they press on the lung and make it bleed if gangrenous. In this case the tubes were removed and the hemorrhage stopped so far as could be determined externally.

### Clinical Diagnoses (from hospital record)

Lung abscess.
Empyema.
Hemorrhage.

### Anatomic Diagnoses

1. *Primary disease.*

   Abscess and gangrene of the right lung, Vincent's type.

2. *Secondary or terminal lesion.*

   Empyema.

## Pathologic Discussion

### by Tracy B. Mallory

The significant pathologic findings were restricted to the right side of the chest. The older of the two operative wounds was partially filled with granulation tissue, and communicated with a small, well-drained abscess cavity which was virtually healed. The posterior and more recent thoracotomy wound opened into a large empyema cavity which overlay the posterior aspects of the middle and lower lobes of the lung and was well walled off from the remainder of the pleural cavity. It contained only a few cubic centimeters of thick, foul pus. Its external wall showed marked fibrous pleural thickening, pointing to considerable chronicity. The unusual part of the picture was the condition of the lung surfaces forming the inner border of the cavity. These showed a fairly uniform layer of gangrene extending in for a distance of 0.5 to 1 centimeter. Smears from the surface of this necrotic portion showed many spirochetes and fusiform bacilli of the Vincent type. It seemed fairly obvious that the necrosis was due to the presence of these organisms in the pleural cavity working inward from the surface of the lung.

The lung itself showed in the middle lobe besides the healing abscess cavity a large area of necrosis and softening, evidently a more recent abscess still in the process of formation. No communication could be demonstrated between either of the abscesses and the empyema cavity. The lower lobe showed extensive atelectasis and several foci of pneumonic consolidation.

Dr. Whittemore: Was there no blood or pus in the pleural cavity?

Dr. Mallory: None was found at autopsy.

Dr. Whittemore: Did you find any little abscess cavities scattered around?

Dr. Mallory: No, except in that middle lobe. In the lower lobe there was straight consolidation.

Dr. Whittemore: That accounts for his continuing to cough up pus in spite of our draining the large abscess cavity.

## CASE 16402

## INEXCUSABLE DELAY. WHOSE FAULT WAS IT?

### Surgical Department

#### PRESENTATION OF CASE

Dr. John D. Stewart*: This patient was a native American seventy-one years old who was admitted to the East Surgical service June 20 complaining of bleeding of some weeks and rectal incontinence for two months.

The past history contained no points of particular interest.

The present illness began eighteen months before admission. At that time the patient passed at stool about half a cupful of fresh blood. He was not particularly alarmed by it and gave the matter little thought. During the following month he had several more hemorrhages. There was no history of change in bowel habits or in sensation. He had a second severe hemorrhage about one month after the first and became alarmed because of the persistency. A physician examined him, told him he had hemorrhoids and gave him suppositories. Until a few months before admission he reported to the doctor every three weeks. During this time he gradually lost strength, but was able to keep at his work. He had no pain of any kind. His bowels were kept open by taking many cathartics. Twelve months ago he began to lose sphincter control. About six months ago he became so weak that he was no longer able to keep at his work. Three months ago he became discontented with his physician and went to another, who told him he had badly infected piles and ought to come to the Out-Patient Department. He finally came, and was sent into the wards for study and treatment.

On arrival examination showed a thin elderly man showing evidence of loss of a good deal of weight. He was quiet and coöperative and appeared to be in no discomfort. There were obvious pallor and weakness. The heart showed no enlargement or murmurs. The sounds were distant, and at the base extremely faint. There were occasional dropped beats. The arteries were markedly tortuous. The abdomen was held somewhat tense. The liver was felt about three centimeters below the costal margin. There was a large bleeding mass protruding from the anus. On rectal examination ulcerating lesions were found involving the anus, and the lower end of the rectum seemed to be fixed anteriorly in the region of the prostate.

It was realized that the patient was a poor operative risk. Roborant treatment was begun with the object of doing an exploratory laparotomy and colostomy at an early date.

The second morning after admission the patient complained of lower abdominal discomfort. Examination at about four o'clock in the afternoon showed a little distention, nothing else remarkable. At seven o'clock he complained again of much more severe abdominal pain which seemed to be chiefly paroxysmal. At that time he was found to be in a state of collapse. His pulse was almost imperceptible but not rapid. His abdomen was rather severely distended at that time. There was diffuse lower abdominal tenderness with resistance. He had not vomited and felt no nausea. His bowels had moved that day. Gradually his collapse became more severe. The blood pressure fell so that it could not be obtained. He died about three hours after the onset of the severe pain. He remained mentally clear to the last. He had not vomited. In the short time he was in the hospital no x-rays were obtained. The studies of the condition had not been completed.

*Recently senior interne on the East Surgical service.

#### Clinical Discussion

Dr. Horace K. Sowles: The only point of interest about this case is that the patient was allowed to go for seventeen months after a pretty severe rectal hemorrhage without an attempt to make a diagnosis. When he came in here he was in extreme condition. The day after admission we decided to do a colostomy, but the following morning he died. He was evidently a hopeless case. That is the whole story.

Dr. Edward L. Young, Jr.: How long will it take for the general practitioner to recognize that a rectal examination is a necessary part of a general physical examination?

#### CLINICAL DIAGNOSIS

Carcinoma of the anus and rectum.

#### ANATOMIC DIAGNOSIS

Adenocarcinoma of the rectum.

#### Pathologic Discussion

Dr. Merrill J. King: The examination was limited to removal of the tumor and inspection of the abdomen. The abdominal organs were negative on palpation.

The rectum showed a completely annular tumor 5 to 6 centimeters in width with its lower margin involving the anus and extending up as far as the finger could reach. There were two small firm red ulcerated masses of tumor tissue projecting from the anus. The central portion of the tumor was very deeply ulcerated. There were several enlarged firm white nodes in the lower posterior lateral wall just over the sciatic plexus. The tumor was adherent to the prostate and the lower posterior portion of the bladder wall, but did not extend through the wall. The bladder and prostate were otherwise negative.

Histological examination shows a typical adenocarcinoma. In a considerable portion there is good gland formation, but in other areas poor glandular and poor individual cellular differentiation. Mitotic figures are frequent. There is moderate invasive growth and moderate mucin production. There is no evidence of malignancy in the prostate.

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## A SHINING EXAMPLE OF DEVOTION TO THE PUBLIC SERVICE

THE recent untimely death of Dr. John A. Ceconi, who since 1926 has had charge under the School Committee of health work in Boston's Public Schools, impels us to speak of the quality of service which he rendered. (A notice of Dr. Ceconi's death appears on page 706.) We shall not attempt a detailed account of Dr. Ceconi's work, but will seek rather to emphasize what seem to us two outstanding accomplishments with which his name is intimately associated.

Some years ago Dr. Francis X. Mahoney, Commissioner of Health of Boston then as now, inaugurated a campaign to protect children from diphtheria by means of Schick-testing followed by toxin-antitoxin injection for non-immunes. The work was conducted upon a large scale by a group of Health Department physicians.

Earnestness and enthusiasm born of the conviction of the value of this method as a means of saving the lives of young children, impelled Dr. Ceconi to throw himself into the work without stint. So hard did he labor at this task that his health virtually broke down, and it is doubtful whether he ever recovered it fully. Meanwhile, the Commissioner of Health had recognized the quality of Dr. Ceconi's contribution and had put him in charge of the campaign. This task was successfully completed under the leadership of Dr. Ceconi.

The ability and the fidelity to the public welfare which Dr. Ceconi had demonstrated in the anti-diphtheria campaign soon led to his appointment by the School Committee as director of the various phases of health work in Boston's Public Schools.

Dr. Ceconi quickly grasped this opportunity for service, appreciated the necessity for reorganization and expansion of the work, and applied himself to it systematically. Within a year great strides had been made and, thereafter, improvements followed rapidly.

Several outstanding new developments in the field of School Health Administration stand to Dr. Ceconi's credit. He organized a new method for administering school medical service by the appointment of supervising school physicians, each supervising physician having administrative responsibilities over a limited district of the City. Each district was small enough to make it possible for the supervising physician to know intimately the problems of each school and to unify the quality and nature of the medical service provided throughout the district. Through these supervising physicians, policies and procedures could be put into effect smoothly and effectively.

Similarly, the school nursing service was strengthened by the appointment of four supervising nurses whose duties were similar in principle to those of the supervising school physicians.

The cardiac survey developed under Dr. Ceconi's direction with the coöperation of leading cardiologists in the City of Boston, stands as one of the outstanding investigations of the last decade in the field of school health service. It made an important contribution to our knowledge of the cardiac conditions in the public schools of America.

Rest and Nutrition Classes constitute another important development. These classes were organized principally to replace open air classes so widely used by American School systems. They take advantage of the fact that rest and nutrition constitute the principal needs of the debilitated child commonly assigned to an open air class. They allow the pupils to remain in the regular classroom except for the rest periods, and they provide carefully selected morning, afternoon and noon lunches, at a minimum cost. In this way children from all grades may be served with a saving of thousands of dollars to the city over the expense that would be required for open air classes.

Dr. Ceconi secured the appointment of a Sani-

tary Inspector through whose services important improvements in the sanitation of school buildings have been effected. He recommended to the School Committee the appointment of a Supervisor of Health Education, and this appointment has recently been made. He instituted at the Boston Teachers' College a course in Health Education for teachers in service, and coöperated with the administration of that institution in further strengthening the health training of undergraduate students. He has coöperated effectively with the State in the Ten-Year Tuberculosis program, and in completing the surveys of educational facilities for crippled children.

These activities have been new developments, pioneering activities. It should be remembered that, meanwhile, with a splendid staff of school physicians, Dr. Ceconi has maintained a quality of school medical service of which Boston may be proud. National recognition of the quality of his work was reflected in his election as President of the American Association of School Physicians.

Citizens of Boston, whether they be laymen or physicians, can realize in some measure the debt which all alike owe to Dr. Ceconi, but this debt can never be paid.

We imagine that if Dr. Ceconi could speak to us again he would ask for but one thing, namely, that his successor should be a man qualified to utilize to the best advantage the foundation already laid and to build wisely upon it for the future.

## THE WILLIAM HARVEY SOCIETY

In these driving days of specialization in medical education where each hour of learning must be applied to the many and ever increasing branches of the medical sciences, the training of what might here be called the soul of the man who is to practise these sciences is often overlooked. Many of the so-called cultural subjects have had to be dropped from the curricula because they no longer directly apply to the technical training that must be acquired in the few short years of the medical course. It is, therefore, refreshing and encouraging to read the announcement printed on another page of this issue of a course of lectures to be given by the William Harvey Society of the Tufts Medical School.

The list of speakers includes names which are already distinguished, and the privilege alone of hearing these men should attract many listeners. But, more interesting by far are the topics which are to be presented. The title of the first lecture, "The Young Adult Male," arrests our attention and stirs our fancy. Later, by way of contrast, one can hear about adult life and its problems. A perusal of the list makes it plain that here we are not to listen to a series of clinical papers, but that we are to be given an opportunity to learn something about human beings, their nature and their problems, and their ways in health and disease.

The undergraduates who have formed this new society apparently have refused to follow the modern utilitarian trend and propose to expand their vision. They have been ambitious, but their ambition has been met by a hearty and sympathetic response, as is shown by the names of the speakers who have consented to lend their aid to this interesting enterprise.

The young gentlemen of the William Harvey Society have our heartiest good wishes for the continued development and success of their project. To our readers we can commend this series of lectures as an opportunity that will repay their attendance.

## THIS WEEK'S ISSUE

Contains articles by the following named authors:

Graves, William P. A.B., M.D. Harvard 1899. F.A.C.S. Baker Professor of Gynecology, Harvard Medical School. Surgeon-in-Chief, Free Hospital for Women and Parkway Hospital. Consulting Gynecologist, Boston Lying-In Hospital. His subject is: "How Cancer Starts in the Cervix Uteri." Page 661. Address: 198 Commonwealth Avenue, Boston.

Lewis, William H., Jr. A.B., M.D. Harvard 1926. Medical House Officer, Peter Bent Brigham Hospital, July 1, 1927-March 1, 1928. Resident Pathologist, Palmer Memorial Hospital 1928-29. Resident in Pathology, Huntington Memorial Hospital. Assistant Pathologist, Pondville Hospital. Assistant in Pathology, Harvard. His subject is: "Leiomyosarcoma of the Cervix." Page 668. Address: Collis P. Huntington Memorial Hospital, Boston.

Chamberlain, Col. Weston P. A.B., M.D. Harvard 1897. F.A.C.S. Honor graduate, London School of Tropical Medicine 1912. President, Board for Study of Tropical Diseases as they exist in the Philippine Islands 1910-1912. In charge of the Sanitary Inspection Service of the Surgeon General's Office during and after the World War and later in charge of Division of Sanitation. Chief Health Officer of the Panama Canal 1924-1929. Colonel, Medical Corps, U. S. A. since May 15, 1917. His subject is: "The Health Department of the Panama Canal." Page 669. Address: 2440 16th Street, N. W., Washington, D. C.

Collins, Wylie L. B.A., M.D. Harvard 1926. D.N.B. Interne, III Surgical Service, Boston City Hospital July 1926 to March 1928. His subject is: "Removal of Entire Lower Dental Plate from the Oesophagus. Case Report." Page 680. Address: 31 Centre Street, Nantucket, Mass.

MARCOTTE, RAYMOND H. A.B., M.D. University of Vermont College of Medicine 1922. His subject is: "Clinical Aspects of Acute Otitis Media and Complications, From Viewpoint of the General Practitioner." Page 681. Address: 215A Main Street, Nashua, New Hampshire.

BURNHAM, ARTHUR W. B.S., M.D. Dartmouth 1914. His subject is: "The Present and Future Status of the General Practitioner in New Hampshire." Page 685. Address: Lebanon, New Hampshire.

## THE BOSTON MEDICAL LIBRARY

### WILLIAM SMELLIE
1697-1763

THE evolution of the art of obstetrics received a very great impetus from the activities of William Smellie who practiced at first as a male midwife, later taking a degree in medicine and making a considerable contribution to practice in this special field. He had a very profound influence upon obstetrical practice during the period of his active life and doubtless what he had contributed became a part of the equipment of many a colonial student who visited Great Britain during that time and after, for he is said to have taught many hundreds of pupils. He was born in Lanark, Scotland, in 1697, within the same district that was the birthplace of three other distinguished British physicians, viz.: William and John Hunter and William Cullen. He finished the grammar grade in the school of his native town but where he received the rest of his training for the practice of pharmacy (for there is evidence that he was also a pharmacist) and medicine is only conjecture. It seems fair to infer that he was apprenticed to an established physician, but who this may have been is not known. The district was a wool growing and hemp raising region and Lanark was the shire town, the center of trade for a number of small neighboring communities. He is next heard of, after leaving school, when he returned to set himself up in practice in his native place in 1720 where he did the work as it came, surgery as well as the general run of medical cases occurring in a rural practice. There is no evidence that at first he had any particular interest in obstetrics, but later on, when he began to keep notes, it became apparent that he was particularly careful in recording his observations upon parturient women and this he continued to be all through his professional life. He did not come from a family in which there had been others engaged in medical practice. Nothing is known of his father's family and not much about his mother's. He was apparently an only child. He refers to numerous experiences with epidemic diseases which raged from time to time on account of which, as some one phrased it "there was no hearing sermon for some time". At this period in Scotland very little of the obstetric practice was in the hands of physicians. The midwives cared for most of it, calling upon the doctors when there were abnormal cases. It is probable that when he entered upon practice he was unregistered, for the laws were very lax. There were many quacks and "stage doctors," as they were called, and it was not at all unusual for even honest men not to be "qualified" by a licensing board. The amount and extent of his practice steadily increased which seems to indicate that he was a man of ability and was recognized as such in an ever widening circle. In this sort of surroundings he continued to practice for nineteen years, when he went up to London because by this time he had a desire to learn more about the handling of obstetric patients. In 1724 he was married to a lady who survived him for five years. In 1733 there is a record at the University of Glasgow which indicates that he was admitted to the "freedom of the Faculty," which in some respects corresponds to medical licensure as we understand it today. From his notebook entries it is quite evident that he was becoming more and more interested in the mechanism of parturition, a thing about which nothing was known and his desire to go somewhere that he might learn more about it was the thought that inspired him to go up to London. Destructive methods were about the only ones tried in cases where a mother was unable to deliver herself and Smellie's observations had evidently convinced him that failure to understand the process of parturition lay at the root of the failure to handle these difficult cases in a way that would make destructive methods unnecessary. He had heard of the use of forceps and procured a pair only to find that they were not adequate to the task in many instances. He had learned that version was a procedure that, under certain conditions, would permit a difficult labor to be shortly terminated. Arrived at London he soon decided that there was not much to be learned there and so in 1739 he went over to Paris where he studied the methods of Gregoire. In addition to his close observation of nature's methods in parturient women Smellie was always willing to learn from others and the library which he started to accumulate in his Lanark days, to which he added all his life and which at his death he bequeathed to the school in Lanark where he received his earliest instructions, is evidence of his earnest desire to learn everything he could from any source whatsoever. He makes frequent reference to those of his preceptors to whom he was indebted. He evidently was not particularly impressed with what he saw in Paris and believed that the conclusion that his own observations had taught him were matters that he wished to work out still further and he probably was influenced to stay in London where opportunity to do this would naturally be greater.

Accordingly he established himself there in

Pall Mall in 1740, and proceeded to secure pupils to whom he might impart his knowledge. As a side issue he practised pharmacy. The teaching of midwifery in London at the time was in the hands of incompetents for the most part. His knowledge of the imperfect methods and his own mechanical ingenuity soon enabled him to perfect manikins upon which he could demonstrate his ideas of the mechanism of labor and these were soon acknowledged to be far superior to the "phantoms" employed by other teachers. As his reputation as a teacher spread he began to pick up a practice. His theoretical teaching was carried on by lectures illustrated by his "machines" and his clinical teaching was done by taking his pupils to the houses of the poor where they witnessed the actual deliveries. His methods met, as usual, with much opposition and he had several influential detractors among the London profession. His acquaintance with and friendship for the Hunters and Dr. Cullen undoubtedly stood him in good stead. William Hunter lived with Smellie for some time when the former first came to London. In 1745 he obtained his medical degree from the University of Glasgow upon recommendation of certain London physicians. Though his path was a thorny one he was not himself polemical or a detractor of others and his abilities and good qualities slowly gained for him something of the recognition he deserved.

The results of his efforts both in teaching and practice began to bear fruit and the British Lying-In Hospital was established in 1749, the City of London Lying-In Hospital the following year, the Queen Charlotte in 1752 and the Royal Maternity in 1757. By the year 1750 the two chief teachers of obstetrics in London were Smellie and William Hunter. Lest any taint of charlatanism should attach to Smellie's name (for there were attacks made upon him which would at least imply that) it is well to note that he counted among his personal friends such men as Stewart, Nesbit and Monro (the anatomist), of Edinburgh, Gordon and Donald Monro of Glasgow, Fothergill, Cullen, William Hunter and Armstrong, all names that stood for the best there was in British medicine.

For many years Smellie had been preparing a Treatise on Midwifery but it was not until 1751 or 1752 that it was published. It was based upon ten years of practice devoted to obstetrics, during which time he had taught above nine hundred students, delivered over eleven hundred poor women and given two hundred and eighty courses on midwifery. The chief contribution Smellie made in his Treatise, among many valuable ones, was the explanation of the mechanics of labor and it was this, as has been said before, which was wholly new and which entirely revolutionized the practice of obstetrics. It was somewhere about 1695 that the Chamberlens first invented the obstetric forceps and for many years kept their discovery a secret. In 1734 in an essay by Butters in the Edinburgh Medical Essays, Duse's forceps were described, but it was not until about 1727 that Smellie first employed them in delivery. He was aware of the fact that such instruments were being used long before he tried them himself.

His own first venture into the field of forceps construction was in the designing of a pair of wooden ones. The object of making them of wood was that they made no noise which was an advantage, for at that time their employment was kept secret from the patient and, if possible, from the midwife. He also devised a lock for the forceps and he first covered them with leather, freshly for each case. In his later practice he used forceps quite freely; in the eyes of some of his critics, too freely. This is probably simply a further exemplification of that which happens so often, viz.: a perfectly proper procedure in competent hands becomes criminal practice in unskilled hands.

Supplementary to his Treatise on midwifery came a second edition with case reports and later still his Tables, the best that had been made up to that time, to illustrate the process of parturition. These Tables were published in 1754. In 1759 Smellie returned to Lanark in the west of Scotland where he had always kept his properties and it was here that he passed the few remaining years of his life. He occupied his time in preparing a second volume of notes on his cases which at the time of his death were in the hands of his long-time friend, Smollett, for revision.

Across the fly leaf of Hunter's copy of Smellie's Treatise in the Hunterian Collection, in what is believed to be Hunter's own handwriting is written "The Author died of an Asthma and Lethargy at his House by Lanark in Scotland in March 1763."

## MISCELLANY

### A SUMMARY OF INVESTIGATIONS ON HAIR DYES

The authorities consulted by the National Better Business Bureau appear to agree on the following conclusions:

1. Hair dyes *per se* are not potentially dangerous to the *majority* of people, when properly used, but are potentially dangerous when misused. Some dyes represent greater danger than others.
2. The use of such terms as "HARMLESS," "SAFE" and "BENEFICIAL," and other adjectives of similar purport are seldom warranted, give a false sense of security and immunity from injury and should be avoided unless supported by definite proof.
3. The term "PERMANENT" is not strictly accurate and should not be used to give the impression that results are everlasting.

4. Hair *dyes* should not be called "HAIR RESTORERS."
5. The unmodified use of the term "HENNA" is justified only when the dye is in fact a genuine henna dye.
6. The use of trade names which mislead purchasers concerning the composition or harmful properties of dyes should be avoided.
7. Directions for use, including a statement of composition and "susceptibility tests," will help purchasers to use hair dyes in an intelligent, safe and satisfactory manner.
8. With some exceptions previously noted, the accuracy of claims appearing in specific advertisements cannot be determined by general rules without reference to the type of dye; an accurate claim for one dye would be false for another.

## RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS, AUGUST, 1930

The number of reported cases of communicable diseases during August of this year was about three hundred more than last year, owing in part to the greater prevalence of measles and to better reporting of gonorrhea and syphilis.

Anterior poliomyelitis showed a very marked increase this month over the preceding month and the reported cases are about ten times as great as those of the same month last year, but has not, however, reached the peaks of 1916, 1927 or 1928.

Diphtheria, while somewhat greater than the corresponding month last year, is still well below the usual amount for August.

An increase in typhoid fever is expected in August and September but the epidemic just west of Boston, giving rise to some forty cases of typhoid, has very greatly increased the amount of typhoid fever.

Influenza has been singularly low this month, with only four cases reported in August.

Scarlet fever shows the degree of prevalence which would be expected for this month.

Lobar pneumonia, pulmonary tuberculosis and other forms of tuberculosis are not unusually prevalent.

Whooping cough, chickenpox and mumps showed approximately the normal degree of prevalence.

### RARE DISEASES

*Anterior poliomyelitis* was reported from Beverly, 9; Boston, 17; Braintree, 1; Brookline, 1; Cambridge, 2; Concord, 1; Dedham, 1; Everett, 4; Foxboro, 1; Framingham, 3; Haverhill, 2; Holyoke, 1; Ipswich, 1; Lawrence, 4; Lexington, 2; Lincoln, 1; Lowell, 3; Lynn, 7; Malden, 1; Marblehead, 1; Medford, 2; Melrose, 2; Newton, 1; Peabody, 6; Provincetown, 1; Reading, 1; Revere, 8; Salem, 3; Saugus, 1; Somerville, 7; Wakefield, 2; Walpole, 1; Waltham, 3; Watertown, 3; Worcester, 1; total, 105.

*Anthrax* was reported from Lynn, 1.

*Dysentery* was reported from Revere, 1; Worcester, 4; total, 5.

*Encephalitis lethargica* was reported from Beverly, 1; Greenfield, 1; Lowell, 1; total, 3.

*Epidemic cerebrospinal meningitis* was reported

MONTHLY REPORT OF CERTAIN COMMUNICABLE DISEASES

| | Cases in Entire Population | | | | Case Rates per 100,000 Pop. | | |
|---|---|---|---|---|---|---|---|
| | August 1930 | August 1929 | Prosodemic Index* | Epidemic Index† | August 1930 | August 1929 | Expected Rate‡ |
| All Causes | 3614 | 3304 | — | — | 81.5 | 75.4 | — |
| Anterior Poliomyelitis | 105 | 11 | 56 | 1.9 | 2.4 | 0.3 | 1.3 |
| Diphtheria | 183 | 179 | 213 | 0.9 | 4.1 | 4.1 | 4.8 |
| Ep. C. S. Meningitis | 10 | 13 | 6 | 1.7 | 0.2 | 0.3 | 0.1 |
| Measles | 227 | 139 | 494 | 0.5 | 5.1 | 3.2 | 11.1 |
| Pneumonia, Lobar | 80 | 76 | 72 | 1.1 | 1.8 | 1.7 | 1.6 |
| Scarlet Fever | 192 | 199 | 343 | 0.6 | 4.3 | 4.5 | 7.7 |
| Tbc., Pulmonary | 332 | 417 | 351 | 0.9 | 7.5 | 9.5 | 7.9 |
| Typhoid Fever | 63 | 42 | 39 | 1.6 | 1.4 | 1.0 | 0.9 |
| Whooping Cough | 551 | 528 | 668 | 0.8 | 12.4 | 12.1 | 15.1 |
| Chickenpox | 70 | 132 | — | — | 1.6 | 3.0 | — |
| German Measles | 22 | 13 | — | — | 0.5 | 0.3 | — |
| Gonorrhea | 630 | 518 | — | — | 14.2 | 11.8 | — |
| Influenza | 4 | 5 | — | — | 0.1 | 0.1 | — |
| Mumps | 144 | 103 | — | — | 3.2 | 2.4 | — |
| Syphilis | 289 | 160 | — | — | 6.5 | 3.7 | — |
| Tbc. Other Forms | 42 | 52 | — | — | 0.9 | 1.2 | — |

*This Index is an attempt to estimate the number of cases based on the trend during the past years which can be expected to occur, and is for the purpose of comparison with the number of cases which actually did occur.

†This ratio expresses how prevalent the disease is compared with the index mentioned above; 1.0 indicates that the actual number of cases equals the expected number. A larger number means a greater prevalence, and a smaller number a lesser prevalence than expected. Thus, 2.0 would indicate twice the expected number of cases, and .5 half the expected number of cases. The method used to determine the indices is described in the August 18, 1927 issue of the *Boston Medical and Surgical Journal*.

‡Calculated from the Prosodemic Index.

from Andover, 1; Boston, 3; Everett, 1; Lowell, 2; Salem, 1; Watertown, 1; Worcester, 1; total, 10.

*Malaria* was reported from Boston, 2; Springfield, 2; total, 4.

*Pellagra* was reported from Boston, 2; Lawrence, 1; total, 3.

*Septic sore throat* was reported from Adams, 1; Beverly, 1; Boston, 1; Lowell, 3; Springfield, 2; Waltham, 1; total, 9.

*Tetanus* was reported from Boston, 1; Norwood, 1; total, 2.

*Trachoma* was reported from Boston, 1.

*Trichinosis* was reported from Attleboro, 1; Somerville, 1; total, 2.

## COMPARISON OF DISEASE INCIDENCE IN CONNECTICUT WITH 1929 AND SEVEN YEAR AVERAGE

MONTH ENDING SEPTEMBER 20, 1930

| | 1930 | | | | | 1929 | | | |
|---|---|---|---|---|---|---|---|---|---|
| Diseases | Week ending Aug. 30 | Week ending Sept. 6 | Week ending Sept. 13 | Week ending Sept. 20 | Average cases reported for week corresponding to Sept. 20 for past seven years | Week ending Aug. 31 | Week ending Sept. 7 | Week ending Sept. 14 | Week ending Sept. 21 |
| Actinomycosis | — | — | 1 | — | — | — | — | — | — |
| Cerebrospinal Men. | 1 | 3 | 1 | — | 1 | 2 | — | — | — |
| Chickenpox | 6 | 2 | 2 | 3 | 5 | 21 | 5 | 2 | 8 |
| Diphtheria | 6 | 5 | 7 | 3 | 20 | 11 | 4 | 19 | 18 |
| Encephalitis Epidemic | — | — | — | — | — | 1 | — | — | — |
| Favus | 2 | — | — | — | — | — | — | — | — |
| German Measles | — | 1 | 4 | 2 | 1 | — | — | 2 | — |
| Influenza | 2 | 1 | 1 | 3 | 2 | 2 | 1 | 1 | 1 |
| Malaria | — | — | — | — | — | 1 | — | — | — |
| Measles | 2 | — | 4 | 3 | 6 | 1 | 3 | 5 | 4 |
| Mumps | 2 | 7 | 7 | 5 | 4 | 5 | 3 | 6 | 4 |
| Paratyphoid Fever | 1 | — | — | — | 1 | 3 | — | — | 24 |
| Pneumonia (Broncho)* | 7 | 5 | 6 | 12 | 11 | 6 | 3 | 11 | 16 |
| Pneumonia (Lobar) | 5 | 6 | 6 | 14 | 11 | 4 | 6 | 9 | 6 |
| Poliomyelitis | 3 | 1 | — | 8 | 5 | 2 | — | — | — |
| Rabies in Humans | — | — | — | 1 | — | — | — | — | — |
| Scarlet Fever | 8 | 3 | 14 | 17 | 19 | 8 | 5 | 7 | 9 |
| Septic Sore Throat | — | 1 | 1 | 1 | — | — | — | 1 | 1 |
| Tetanus | — | — | — | 1 | — | — | 1 | — | — |
| Trichinosis | — | — | 1 | — | — | — | — | — | — |
| Tuberculosis (Pul.) | 19 | 34 | 22 | 34 | 28 | 23 | 14 | 26 | 36 |
| Tuberculosis (O. F.) | — | 2 | 3 | 1 | 1 | 2 | 1 | 3 | 1 |
| Typhoid Fever | 1 | 2 | 12 | — | 10 | 4 | 1 | 3 | 1 |
| Undulant Fever† | — | — | — | — | — | — | — | 2 | — |
| Whooping Cough | 22 | 30 | 44 | 18 | 50 | 21 | 18 | 17 | 31 |
| Gonorrhoea | 23 | 21 | 46 | 55 | 26 | 17 | 27 | 46 | 29 |
| Syphilis | 26 | 41 | 23 | 37 | 22 | 42 | 29 | 42 | 30 |

Remarks: No cases of Asiatic cholera, glanders, plague and yellow fever during the past seven years.

*Made reportable January 1, 1925.
†Made reportable July 1, 1928.

## THE DIRECTORY FOR MOTHERS' MILK, INC.

The Directory for Mothers' Milk, Inc., formerly located at 270 Commonwealth avenue, is all settled in its new headquarters at the Lying-In Hospital, 221 Longwood Avenue.

This institution established in a very humble way in 1910 has expanded very rapidly especially in the last few years under its present management.

The main reason for the present change is the addition of a lecture room where a more extensive educational program can be carried out. Here a lecture course will be given to medical students by Miss Cornelia MacPherson, general director of the Directory. In their new home it will also be possible for Miss MacPherson to give a series of talks to the mothers who supply the Directory with milk as to diet and personal hygiene.

The milk of each individual mother is examined chemically and bacteriologically for dilution or impurities. The entire day's supply is pooled at the

laboratory, strained, bottled, and pasteurized. The surplus, or emergency supply, is placed in an electric refrigerator which keeps it at a temperature of 40 degrees Fahrenheit.

With this larger and more adequately equipped laboratory the Directory will be better able to supply the increasing demands from the various Boston hospitals.

The officers of the Directory for Mothers' Milk, Inc., are: President, Mrs. Fritz B. Talbot; vice president, Mrs. Alvin F. Sortwell, Jr.; treasurer, Mrs. A. Wilder Pollard; and secretary, Mrs. Francis M. Rackemann. The consulting physicians are Dr. Robert L. DeNormandie, Dr. Martin J. English, Dr. John L. Morse, Dr. Franklin S. Newell, Dr. Warren R. Sisson, Dr. Richard M. Smith, Dr. Harold C. Stuart, Dr. Howard T. Swain, and Dr. Fritz Talbot.

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## TUBERCULOSIS ABSTRACTS

### By the National Tuberculosis Association

That children may have a latent form of tuberculosis is a novel and disturbing thought to most parents and teachers. The growing appreciation of the significance of childhood type of tuberculosis is creating a demand that something be done to prevent the latent form of the disease from progressing. Some are urging the development of preventoria. But there is considerable confusion in the public mind, as well as among the profession, as to what a preventorium is and what purpose it is supposed to serve. The following is a résumé of a recent article attempting to clarify the subject.

#### WHAT IS A PREVENTORIUM?

The term "preventorium" was first used to designate a convalescent home for adults (Brehmer's Rest at Ste. Agathe des Monts in Canada) on the ground that any depleting illness may predispose to tuberculosis and that after-care tended to prevent tuberculosis.

In 1909, New York City, through the interest of Dr. Alfred Hess, established at Farmingdale, N. J., an institution to take care of "pre-tuberculous" children. It was called a preventorium. Unlike the Canadian institution, which was designed for convalescent adults, that at Farmingdale was exclusively for children presumably threatened with tuberculosis. Similar institutions sprang up, though practices and procedures were not uniform.

Ideas as to what the preventorium was supposed to be and do were vague. However, the dominating purpose of all was a desire to provide care for the sick child. The term, "pre-tuberculous," was applied rather loosely to the child with actual tuberculosis, the child of a tuberculous household, and the child below par in health, as expressed usually in malnutrition, but all were regarded as sick children.

Quite another development in these early days was the establishment of fresh air schools and open window rooms. Their purpose was to increase the resistance of certain selected persons, who were not sick but who were presumed to be potential victims of tuberculosis. The emphasis was on health building rather than on disease prevention.

As we learned to differentiate infection, mass infection, and actual disease, and as it became evident that the beneficial results of both preventoria and fresh air schools were to be attributed to rest, good nutrition, and a well-regulated regimen, the procedures and objectives of both types of institutions tended to merge. For that reason, it is today impossible to answer statistically how many preventoria and fresh air schools there are in the United States.

Three years ago, the Committee on Preventoria of the National Tuberculosis Association formulated this definition: "A preventorium is a twenty-four hour, twelve months institution for the care and observation of children substandard in health." The general purpose of this institution was assumed to be giving preventive care to children threatened with tuberculosis, heart disease, or other potential disability. Exact standards of eligibility were not defined but the Committee indicated the groups from which selections for the preventorium might be made, as follows:

1. Children exposed to tuberculosis at home, or in whose immediate family there has been a recent death from tuberculosis.
2. Children who have had tuberculosis, whose lesions are not active, and who appear to be in need of further care and observation.
3. Children suffering from malnutrition.
4. Children who tire easily and who are unable to carry on their class work.
5. Children frequently absent because of colds, bronchitis, etc.
6. Children suffering from rheumatic heart disease (of certain classifications).

It is now recognized that many children who need protective care do not require the exacting regimen furnished by a twenty-four hour, highly specialized preventorium. Some preventoria assume complete charge of their children, keeping them for twenty-four hours of the day the year round until they have apparently developed good resistance, while others permit their charges to return home over the week-end. The predominating purpose of these institutions is to give medical care, and secondly to provide school instruction. Another type of preventorium is essentially a school which cares for the children only during school hours and which furnishes supplementary meals, rest periods during the day, etc., while in the meantime conditions in the children's homes are scrutinized and supervised by a special follow-up worker.

While preventoria, fresh air schools, open window classrooms, nutrition classes, and health camps vary widely in their procedures, the main purpose of all seems to be to give handicapped children an extra lift so as to prevent the threatened disaster of pulmonary tuberculosis in later years. Opinion in the main seems to be that children with the childhood type of tuberculosis (unless progressive) should not be regarded as sick chil-

dren but rather as being threatened with disease. Certainly, children with the adult type of pulmonary tuberculosis should not be in the preventorium, not only because they are definitely ill, but also because they are potential spreaders of the disease.

There would be less confusion of thought about preventoria were discussions concerned not so much with building construction, physical equipment, staff, etc., but with the therapeutic requirements of children who need protective care. Indications for treatment of such children are:

1. Contact with the tuberculous adult, who presumably has infected the child, must be broken. This is done by removing the tuberculous adult to a sanatorium, by taking the child out of the home, or by teaching every member of the household the principles underlying the transmission of tuberculosis.

2. The child must be relieved of all possible strain, i.e., strenuous exercise and burdensome school work. Rest is the cornerstone on which preventorium care is based.

3. The child's health must be built up; physical defects must be corrected and the benefits of good food, sunshine, and fresh air must be made available.

4. The psychology of the child must be adjusted so that he will not think of himself as being inferior to others gifted with greater reserve of physique, and yet restrain over-ambitious impulses.

These indications for treatment can, under ordinary circumstances, be met without the aid of a definite institution, but there are, of course, numerous "problem families," as the social worker calls them, where it is impossible to meet the requirements enumerated above. These problem families are not limited to the poor or ignorant, but include many families of intelligence and of means who, for any reason, are unable to afford the child the necessary protection.

While no formula can be given for the solution of the problem, an understanding of the general principles should enable any community to determine the type of preventorium care which best suits its needs. The various attempts now being made to cope with the problem should be regarded as experiments. The test of time will reveal which type of preventorium is the most efficient. Fortunately, a number of preventorium institutions are carefully following their pupils into adult life in order to learn what their subsequent experiences may be. When enough of such data has been collected, we may be able to determine more precisely what the ideal form of organized care may be.—*What Is a Preventorium?—H. E. Kleinschmidt, Jour. of Pub. Health, July, 1930.*

## A RECORD OF EYES SAVED IN INDUSTRY

How more than 10,000 eyes and at least $46,000,000 were saved in two recent years among 583 plants, employing a total of half a million workmen, is told in the report of a study entitled "Eyes Saved in Industry," published in New York Sept. 15, 1930 by the National Society for the Prevention of Blindness and the National Safety Council. The two organizations set out to discover the total of authenticated cases of workmen's eyes saved from serious injury or destruction through the use of goggles or headmasks; as these figures apply only to the corporations with definite records, there can be only conjecture as to the number of eyes actually saved by protective devices in all American industry.

The survey analyzes the records kept by the corporations during 1926 and 1927, disclosing that in addition to the financial economy 2,757 men and women were saved from serious injury or total blindness in both eyes during the two years. There were 4,654 recorded instances of workmen being saved from a similar fate to one eye, making a total of 10,168 eyes saved from destruction or serious injury.

"In this study, the first of its kind ever made," explained Lewis H. Carris, Managing Director of the National Society for the Prevention of Blindness, "it was assumed that an object which hit a goggle lens with such force as to pierce or shatter the lens would most certainly have so damaged the eye, if the goggles had not been worn, as to cause complete or nearly complete loss of vision. It was assumed, further, that every instance of a goggle lens bespattered by molten metal or by corrosive or otherwise injurious chemicals, represented an eye saved."

"The increase in the use of destructive chemicals in industry during recent years," said Mr. Carris, "is reflected in the data from miscellaneous manufacturing plants which recorded the spattering of both lenses with molten metal or injurious chemicals in the case of one employee out of every hundred in the industry within a year. In practically all these instances the glass lens was so badly damaged by chemicals or molten metal that it had to be replaced. Often even the frame of the goggles or the entire headmask had to be discarded.

"Much has been said concerning the number of eyes *lost* in industry, the cost of industrial eye injuries, and the extent of blindness attributable to the eye hazards of industrial occupations. Little has been said concerning the number of eyes *saved* in industry, the economic gain of this saving to employer, employee and nation, or the extent to which blindness from industrial causes may be averted. Little has been said concerning these matters because practically no authentic data covering the experience of any large group of industries were available until this study was made.

"It is, of course, impossible to interpret accurately in terms of dollars the cost of blindness, or the gain resulting from concrete instances of prevention of blindness. Workmen's compensation laws, however, set certain arbitrary values on sight; and the experience of insurance companies and of large numbers of employers has provided a formula for arriving at estimates of the incidental cost of industrial accidents. It is, therefore, possible to arrive at some

conclusions concerning the economic saving to industry, to employees, and to the country at large, resulting from the saving of eyes recorded in this study.

"The eye hazards of industry have come to be one of the most serious causes of blindness in America. There is, in fact, considerable ground for the belief that each year more persons are permanently robbed of their sight by occupational hazards than by any other major cause of blindness.

"This is due largely to the fact that innumerable persons, employers and employees alike, still do not realize, or do not believe, that it is possible to prevent accidental eye injuries in the particular occupations in which they are engaged. It is due also to the failure on the part of employers or employees and communities at large to appreciate the tremendous financial loss resulting from the blinding of men and women in industry.

"Despite the splendid accomplishments of many individual firms in the prevention of accidents in general, and specifically in the prevention of eye accidents, such accidents are still considered by many persons inherent or unavoidable accompaniments of certain industrial processes. Despite the tremendous financial savings through accident prevention publicly and authentically reported by some of the leading industrial concerns of America, there are still thousands of employers who regard as an unavoidable (though evil) necessity the payment of thousands upon thousands of dollars for the destruction or injury of the eyes of their employees.

"That these are misconceptions; that industrial eye injuries are largely preventable; and that their prevention is productive of enormous savings to employer, employee and the nation, are convincingly demonstrated in the findings of this study and the interpretation of their significance.

"The saving of sight referred to in the study is necessarily largely hypothetical. Anyone acquainted with industrial processes, however, will realize that these recorded instances of the prevention of blindness and serious injury represent only a small percentage of the total number of cases in which sight is clearly saved through the use of proper protective devices. For each instance in which a goggle lens is shattered or pierced by flying objects there are scores, if not hundreds, of instances in which the goggle lens stops the flight of an object which would have pierced the unprotected eye with disastrous results.

"The comments volunteered by safety engineers and plant managers in this inquiry indicate that there were thousands upon thousands of instances in which tiny fragments of metal or mineral were imbedded in or fused with the goggle lenses and that a high percentage of these instances represents the prevention of blindness or of serious eye injuries.

"Many plants reported they were using non-shatterable lenses. These and, in fact, the lenses of ordinary goggles and masks may be struck dozens of times by large pieces of metal without being pierced or shattered. Any estimate of the number of eyes saved in industry based on the record of goggle lenses broken, shattered or spattered with molten metal or destructive chemicals while in use is, therefore, most conservative."—*Bulletin of The National Society for the Prevention of Blindness.*

## AN EXCERPT FROM THE RESOLUTIONS UNANIMOUSLY ADOPTED AT THE CLOSING MEETING OF THE CATHOLIC HOSPITAL ASSOCIATION OF THE UNITED STATES AND CANADA AT ITS FIFTEENTH ANNUAL CONVENTION, CATHOLIC UNIVERSITY OF AMERICA, WASHINGTON, D. C., SEPTEMBER 5, 1930

Be It Resolved, that this Association undertake, in the course of the next year, the study of the financial status of the Catholic hospital in the United States and Canada with special reference to the economic value of the Catholic hospital in its community; that this Association express its understanding sympathy with the aims and the labors of the Committee on Medical Costs and that the Association endorse the viewpoint of that Committee implied in its change of name from a "Committee on the Cost of Medical Care" to the "Committee on the Costs of Medical Care" for this Association clearly recognizes that the financial cost of medical care is only one of the costs which must be considered and that this cost of medical care is only one of the costs which ordinate one in the great purpose of supplying adequate medical care to our entire population.

Approved.

ALPHONSE M. SCHWITALLA, S.J., *President.*

# CORRESPONDENCE

## LOOK OUT FOR NEGATIVE SMEARS

The Commonwealth of Massachusetts
Department of Public Health
State House, Boston

September 24, 1930.

Editor, *New England Journal of Medicine.*

*Dear Sir:*

The *New England Journal of Medicine*, in its issue of September 4, 1930, printed a communication from Dr. William Frankman under the caption "Look Out For Negative Smears". Dr. Frankman warned against taking too seriously smears negative to the gonococcus, especially in genito-urinary disease in the female. This warning is both timely and sound.

Those who have the right to the title of "Authority" have this to say as to the reasons for the almost general failure to discover gonorrhea in the female, or to treat it intelligently:—

1. There is frequent failure to examine the patient as to history of the illness and as to objective signs, the physician being content to prescribe an antiseptic douche for every patient who complains of vaginal discharge.

2. The probability of gonorrheal infection is too frequently dismissed because the patient is a "respectable woman". It seems to be forgotten that

an infected husband may bring gonorrhea home to the most respectable wife. The fact that 75% to 90% of men with gonorrhea acquire infection while single and that 50% to 75% of women with gonorrhea are married, is sufficient evidence of the part which marriage plays in the infection of entirely innocent women.

3. There is no generally adequate conception of what gonorrhea is in the female. To many physicians, it is an acute vaginal discharge in a prostitute;—they miss the chronic and the "respectable" or innocent cases. To some it is "vaginitis";—they miss the urethral, the cervical and the pelvic infections. To others it is "cervicitis";—they have forgotten that the infected endometrium or the higher structures may be responsible for the pus pouring through the cervix and they treat the latter in vain. To the surgically inclined it is "salpingitis";—they remove (often needlessly) one or both tubes but forget the gonorrhea in the other pelvic tissues, in the cervix and in the urethra.

4. There is too great dependence upon the laboratory and too little upon careful and intelligent clinical observation. It is remarkable how completely blinding the report of a laboratory "negative for the gonococcus" can be! An occurrence of the past week, and of which there are many similar, is illustrative. A physician reported to this Department the name of a woman said to have been exposed to gonorrhea. The local board of health, upon receipt of the report, located the woman and advised examination, only to have waved under its official nose a document, signed by a physician, stating that a smear was negative. This physician later disclosed that the woman had requested an examination because she had had intercourse several times with a man who, she had learned, was under treatment for gonorrhea. A single vaginal examination was made and a single smear taken. A public laboratory reported the smear to be "negative for the gonococcus". Without further hesitation the certificate of freedom from infection was issued!

One Massachusetts clinic which has handled some 4000 cases of gonorrhea in the female finds that even in the acute stage the first smear is "negative" in one-half the cases; that in the sub-acute cases by far the majority of smears are negative, and that the older the case the less the likelihood of ever finding the gonococcus. This in spite of ample history, clinical and often surgical evidence upon which to make the diagnosis. In fact, recurrence of positive smears in the course of chronic gonorrhea in the female is more frequently evidence of constant re-infection than of anything else.

It is almost unfortunate that the laboratory has entered into the diagnosis of gonorrhea. Its present function seems to be to confirm an obvious clinical diagnosis of acute gonorrhea and of writing "finis" to all further suspicion of the disease in its later stages.

Gonorrhea in the female will remain undiagnosed and untreated until physicians

1. Suspect gonorrhea in female genito-urinary diseases no matter how "respectable" the patient;

2. Forget "vulvitis', "vaginitis", "cervicitis" and "salpingitis" as entities and think of gonorrhea as an infection of the entire genito-urinary tract, the mucosa of which is continuous.

3. Search for pus, microscopic as well as macroscopic, for where there is pus there is infection.

4. Treat the patient as for gonorrhea if history and clinical findings warrant even though the gonococcus cannot be found in smears.

5. Above all, do not sacrifice all the effort that it has required to come to the point of suspecting gonorrhea, on the altar of a single smear negative for the gonococcus.

Yours truly,

N. A. NELSON, M.D., *Epidemiologist*,
In Charge of Venereal Disease Control.

## MEDICAL REFORMATION

Editor, *New England Journal of Medicine*,

*Dear Sir:*

In order to awaken those unmoved by sheer argument to the need of medical reformation may I cite a few authentic examples of the absurdities of undividualistic medicine with its diverse incomplete, and uncoördinated health agencies.

A mother took her boy to a physician for supposed malnutrition and bronchitis only when in the course of several years they had become so severe as to keep him out of school. He had been under the supervision of the school nurse upon whose advice he had been drinking more than a quart of milk a day, eating much ice cream, and going into the country week-ends to stay with friends living on a large farm. Examination showed him to be afflicted with asthma. Skin tests revealed him to be sensitive to the proteins of not only milk but also horse and dog hair. Is this not a strong indictment against our improperly organized school health departments with their part-time contract physicians making their hasty, superficial examinations in noisy, crowded rooms and corridors and their independent nurses who ignore the private doctors?

An insurance agent whose wife had been delivered of a normal baby was advised by the attending obstetrician to entrust the care of the infant to the leading pediatrician in order to give the latter, whose future services would be required, an opportunity to get well acquainted with its constitution. It appealed to the father as a matter of good insurance, even after he had received a bill for one hundred dollars for the two weeks' attendance upon his lusty offspring. Four months later when the infant first appeared ill, the father called up the office of the specialist, whose secretary answered, saying that the doctor was so busy that it would be necessary to send an assistant. Righteously indignant was the anxious father that he should be denied the benefit of the services of the only one who he believed, could understand the ailment of his precious babe. Having explained that he had a virtual lien upon the doctor's services, he was assured that his demand would be met. So, late in the eve-

ning when the child was asleep the specialist finally arrived, so tired that he dropped into the nearest chair with the apology that he had seen forty private patients that day. Though exhausted he was able to prescribe with success, for the baby had only a coryza. When men graduated from our best medical schools and connected with our large hospitals, to satisfy the popular demand for specialists, have to resort to conduct deviating so far from common sense, humanity, and truth, surely a noble profession has deteriorated into a diabolical business. It reverts to the former day when the services of the most popular doctor when drunk were more acceptable than those of any other when sober.

A general practitioner decided after a careful examination that one of his patients of the enteroptotic type who had worked steadily as a chauffeur for an exacting family for fifteen years was nervously exhausted and recommended that he rest. Three days later a prominent surgeon in the city, a former president of the district medical society, informed the family physician by telephone that he, himself, had been hired by the wealthy employer of the chauffeur to take charge of the case. Without further ado, he stole the patient sending the weary man about from one doctor to another for various tests. About a week later the pitiable patient was told he had nothing wrong but a mild degree of enteroptosis and was pronounced fit to resume his occupation. No attention was given to the patient's subjective symptoms. The only consideration governing the disposition of the case was the eagerness of the truculent employer for the return of the chauffeur to work. Dr. Patrick Collins was not far wrong when he declared in the September issue of Harper's Magazine in 1929, that the root of the evils of medicine nowadays was money. No wonder the members of the committee on ethics of our medical society are sorely embarrassed and hopelessly perplexed by the prevailing chaotic state of medical practice, for medical ethics are broken even when health and life are endangered.

Then again, one night a general practitioner was asked by a neighbor to go across the city to relieve the neighbor's aunt suffering from heart disease. She had for several months been attended by a doctor recommended to her as a heart specialist. Even though her son had vainly pleaded with the reputed cardiologist to relieve his mother stricken quite suddenly, the doctor professed to be too sleepy and tired either to go himself or to send any one. The patient's attack of paroxysmal tachycardia was without difficulty found to be due to hyperthyroidism which was duly cured by appropriate surgical treatment. Surely, the unbridled, self-appointed specialists are in just as urgent need of control as were practitioners in general before the establishment of the Board of Registration in Medicine.

Individualism in medicine has certainly been rendered by the progress of civilization quite impracticable. So, competitive medical practice must give way to a coöperative medical service.

September 12, 1930. G. W. Haigh, M.D.

## RECENT DEATHS

**Ceconi**—Dr. John Aloysius Ceconi, since 1926 head of the Medical Department of the Boston public schools and connected with municipal public health work since 1906, died at his home in Dorchester, September 21, 1930, at the age of 49. He had been operated on at the Boston City Hospital two weeks previously.

Dr. Ceconi was a graduate of Boston College and of Tufts College Medical School in 1904. He was made medical inspector of schools in 1906, health inspector in 1913 and joined the army at Camp Dix in 1918. He was discharged a year later with the rank of major, having had charge of work on contagious diseases at the camp. He resumed his city position and in 1922 became director of communicable disease, and in 1925 was promoted to the position of medical head of the school department that he held until his death.

He was a member of the American Medical Association, the Massachusetts Medical Society and numerous other organizations of the profession.

A widow, Mrs. Louise Roster Ceconi, and his father John E., survive him.

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**Chandler**—Dr. Charles Henderson Chandler, a Fellow of the Massachusetts Medical Society, formerly with an office in Boston, died at Fort Fairfield, Maine, September 5, 1930, aged 44. He was a graduate of Tufts College Medical School in the class of 1911. Dr. Chandler was twice married, his second wife surviving him.

## NOTICES

### THE EDWARD K. DUNHAM LECTURESHIP

In 1923 there was founded in memory of Doctor Edward K. Dunham (M.D., Harvard, 1886), the Edward K. Dunham Lectureship for the Promotion of the Medical Sciences. Among the useful purposes for which the Foundation was established was that of binding closer "the bonds of fellowship and understanding between students and investigators in this and foreign countries". The lecturers are chosen from "eminent investigators and teachers in one of the branches of the Medical Sciences, or of the basic Sciences which contribute towards the advance of Medical Science in the broadest sense". The lectures, which are given annually, are "free and open to the faculty and students of the Harvard Medical School and College, and all other interested professional persons who may profit by them".

Under this endowment Franz Knoop, M.D., Professor of Physiological Chemistry, director of the Institute for Physiological Chemistry, University of Tübingen, will deliver two lectures on Intermediary Metabolism, October 15 and 17 at five o'clock, at the Harvard Medical School, Amphitheatre Building C.

## LAWRENCE CANCER CLINIC

There will be a Demonstration Clinic with a Boston consultant in attendance, upon the occasion of the regular session of the Lawrence Cancer Clinic, at the Lawrence General Hospital, 1 Garden Street, Lawrence, Massachusetts, on Tuesday, October 7, at 10 A. M. sharp.

Physicians in the jurisdiction of Essex North District Medical Society are invited to be present, and to bring or send cases for diagnosis and advice. The profession in general will be welcome.

J. FORREST BURNHAM, M.D.,
*Chairman for the Committee.*

## COURSES IN BRONCHOSCOPY AND ESOPHAGOSCOPY BY PROFESSOR CHEVALIER JACKSON, ASSISTED BY DRS. AUCOIN, EEMAN AND CHEVALIER LAWRENCE JACKSON

One course will be in connection with the service of Dr. Fernand Lemaitre, 10 A. M., October 20 to 24 inclusive at l'Hopital St-Louis, Paris.

This course will consist of five sessions of two hours each. They will be given in French, with translations in English. The course covers the technique of direct laryngoscopy, bronchoscopy, esophagoscopy and gastroscopy; the mechanical problems of foreign body extraction; the endoscopic diagnosis and treatment of diseases of the larynx, bronchi, lungs, stomach and esophagus. Demonstrations will be by chalk talk, open manikin board, lantern slides and cinematograph.

The five sections of the course are open to physicians and students. No fee is charged and registration is unnecessary.

### COURSE II

The course given by Professor Chevalier Jackson will be accompanied and followed by a practical course given in English and French by Dr. Edmond Aucoin, Dr. Fernand Eeman, and Dr. Chevalier Lawrence Jackson, assistants of Professor Chevalier Jackson.

First week, October 20 to 25. Practical work on the cadaver; endoscopic anatomy; landmarks; dangers and how to avoid them; mechanical problems of foreign body extraction.

Second week, October 27 to 31. Practical work on the narcotized dog. Practice is afforded each registrant in all the mechanical problems of extraction of all kinds of foreign bodies from the living, moving bronchi of the dog. All the difficult problems of bronchoscopic work on babies are closely simulated.

The Practical Sessions will be at the Laboratoire de Médecine Opératoire, of the Faculté de Médecine, (Professeur Bernard Cuneo) and will require two hours, beginning daily at 14 o'clock (2 P. M.).

Course II will be limited to fifteen registrants. The laboratory fee is 1000 francs.

For further information and for registration write to the Secretary, Melle Jeanne Gobréau, 120 Avenue Victor-Hugo, Paris (16e) France.

## REMOVAL

Dr. I. W. Josselson announces the removal of his office from 1069 Boylston Street to 483 Beacon Street, Boston.

## THE WILLIAM HARVEY SOCIETY OF THE TUFTS COLLEGE MEDICAL SCHOOL

The William Harvey Society of Tufts College Medical School announces a course of eight lectures to be delivered, one each month, beginning October 10, in the auditorium of the Beth Israel Hospital. The society, which was founded last spring by the students of Tufts Medical School, seeks to further interest in the art of medicine. In general, the humanities in their relation to medicine will be emphasized rather than the scientific and technical aspects of the subject.

Medical students and the profession at large are cordially invited. All of the lectures are scheduled for the second Friday of each month at 8 o'clock in the evening. The program follows:

October 10, 1930. Speaker: Dr. Alfred Worcester, Professor of Hygiene, Harvard University. Subject: "The Young Adult Male". Chairman: Dr. A. Warren Stearns, Dean of Tufts Medical School.

November 14, 1930. Speaker: Dr. Howard W. Haggard, Associate Professor of Applied Physiology, Yale Medical School. Subject: "Medicine Through the Ages". Chairman: Dr. Nathan Sidel, Instructor in the Theory and Practise of Medicine, Tufts Medical School.

December 12, 1930. Speaker: Dr. Elliott P. Joslin, Clinical Professor of Medicine, Harvard Medical School. Subject: "The Carbohydrates in the Body". Chairman: Dr. David Rapport, Professor of Physiology, Tufts Medical School.

January 9, 1931. Speaker: Dr. George H. Bigelow, Commissioner of Public Health, Commonwealth of Massachusetts. Subject: "Adult Life". Chairman: Dr. Clarence L. Scamman, Lecturer in Public Health, Tufts Medical School.

February 13, 1931. Speaker: Dr. Frank H. Lahey, The Lahey Clinic. Subject: "Goitre". To be illustrated with slides. Chairman: Dr. Edward M. Hodgkins, Assistant Professor of Surgery, Tufts Medical School.

March 13, 1931. Speaker: Dr. Samuel R. Meaker, Professor of Gynecology, Boston University Medical School. Subject: "The Social Aspect of Gynecology". Chairman: Dr. Louis E. Phaneuf, Professor of Gynecology, Tufts Medical School.

April 10, 1931. Speakers: Dr. Herbert S. Hutchinson, of Milford, New Hampshire; Dr. Henry A. Christian, Physician-in-Chief, Peter Bent Brigham Hospital. Subject: "The Old and the New in General Practise". Chairman: Dr. Cadis Phipps, Professor of Medicine, Tufts Medical School.

May 8, 1931. Program to be announced.

# NOTICES OF MEETINGS

## MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

The next meeting will be held Thursday, October 16, at the Weston Country Club.

Subject: Symposium on Uterine Bleeding.

Illustrated with lantern slides and moving pictures.

Speakers: Dr. A. K. Paine, Dr. F. J. Lynch, Dr. M. F. Eades, Dr. Charles F. Mongan, Dr. Frederick L. Good, Dr. Louis E. Phaneuf, Dr. Foster S. Kellogg, Dr. Samuel R. Meaker.

Luncheon to be served and time to be announced.

ALEXANDER A. LEVI, M.D., *Secretary.*

## GREATER BOSTON MEDICAL SOCIETY

A meeting of the Greater Boston Medical Society will be held on Tuesday, October 7, 1930, at 8:15 P. M., at the Beth Israel Hospital.

Program:

Dr. Edwin H. Place, "Recent Advances in the Immunology of Infectious Diseases." Discussion: Dr. S. H. Rubin, Dr. H. Green, Dr. E. Friedman.

BERNARD I. GOLDBERG, M.D., *Secretary.*

483 Beacon Street, Boston, Mass.

## NEW ENGLAND PEDIATRIC SOCIETY

The Fall meeting of the New England Pediatric Society, as in the past, is to be a combined meeting of the Philadelphia Pediatric Society, the Pediatric Section—New York Academy of Medicine and the New England Pediatric Society, and is to be held this year in New York, October 11, 1930.

The program includes a clinical meeting at the new Babies' Hospital and inspection of the Medical Centre of Columbia University.

GERALD HOEFFEL, M.D., *Secretary.*

## SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

**March-October** — International Medical Postgraduate Courses in Berlin. Complete notice appears on page 853, issue of October 24, 1929.

**October 7**—Greater Boston Medical Society. Complete notice appears above.

**October 11**—New England Pediatric Society. Detailed notice appears above.

**October 13-17**—Clinical Congress of the American College of Surgeons. Complete notice appears on page 1175, issue of June 12.

**October 20-24**—International Assembly of the Interstate Postgraduate Medical Association of North America. Detailed notice appears on page 291, issue of August 7.

**October 20-31**—Third Graduate Fortnight of the New York Academy of Medicine. Detailed notice appears on page 547, issue of September 11.

**October 22, 23, and 24**—The Annual Convention of the American Academy of Physical Therapy. Complete notice appears on page 498, issue of September 4.

**October 27-30**—The American Public Health Association. Detailed notices appear on page 1271, issue of December 19, 1929; page 547, issue of September 11, and page 659, issue of September 25.

**March 23-27, 1931** — Fifteenth annual clinical session of the American College of Physicians. Detailed notice appears on page 790, issue of April 17.

**July 27-31, 1931**—Third International Congress of Radiology, Paris. Complete notice appears on page 385, issue of August 21.

### DISTRICT MEDICAL SOCIETIES

**Bristol North District Medical Society**

**April 16, 1931**—Taunton Woman's Club.
**September 17, 1931.**

**Franklin District Medical Society**

**November, 1930-May, 1931**—The meetings are held on the second Tuesdays of November, January, March and May at 11 A. M. at the Weldon Hotel, Greenfield.

**Middlesex East District Medical Society**

**October 8**—Joint meeting with Middlesex North and Essex North and South.

**November 12**—New England Sanitarium and Hospital, Stoneham.

**January 14, 1931**—Harvard Club of Boston.
**March 11, 1931**—At Reading.
**May 13, 1931**—At Wakefield.

**Middlesex South District Medical Society**

**October 16**—At the Weston Country Club. Detailed notice appears elsewhere on this page.

# BOOK REVIEWS

*Clio Medica: A Series of Primers on the History of Medicine.* I. The Beginnings, Egypt and Assyria. By WARREN R. DAWSON. New York: Paul B. Hoeber, Inc., 1930. ix + 86 pages. Price, $1.50.

This little book of less than 100 pages is the first volume of a series of small handbooks on medical history. The author has succeeded, in the space of about 75 pages of text, in condensing to a remarkable degree our knowledge of Egyptian and Assyrian medicine. Dawson's studies on this subject are well known, for he is the author of two larger books, one in collaboration with G. Elliot Smith on "Egyptian Mummies", 1924, and the other, "Magician and Leech", 1929. This book, in spite of its size, forms a substantial contribution to the subject as the author has made a direct and prolonged study of the texts themselves before summarizing his investigations.

*Clio Medica: A Series of Primers on the History of Medicine.* II. Medicine in the British Isles. By SIR D'ARCY POWER. New York: Paul B. Hoeber, Inc., 1930. ix + 84 pages. Price $1.50.

This is the second volume of the primers in medical history published, this year, in New York. As in the previous book by Dawson, the author of "Medicine in the British Isles" is an outstanding authority on the subject, for he has already edited a book on an early English physician, entitled, "John of Arderne", 1910, has written "A Short History of St. Bartholomew's Hospital", 1923, and many years ago wrote one of the best short lives of William Harvey, 1897. In the present volume he has condensed his knowledge of early English medical history and has written interesting chapters on "The Medical Corporations", "The Hospitals", "Medical Education", "Nursing", "Specialism", and lastly, has found room to mention "Some Masters of British Medicine." Accurately and clearly written, this little book is also a very valuable addition to medical history.